

**Supplementary Table 8 A. *niger* proteins involved in cell wall biosynthesis**

| <b>Gene</b>        | <b>Beta-1,3-glucan synthesis and processing</b>                                                                                          | <b>Protein<sup>1</sup></b> |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>Gas-family</b>  |                                                                                                                                          |                            |
| An02g03070         | Predicted GPI-anchored protein. Putative 1,3-beta-glucanosyltransferase GH72; <i>A. fumigatus</i> Gel3-like                              | GelC                       |
| An09g00670         | Predicted GPI-anchored protein. Putative 1,3-beta-glucanosyltransferase GH72; member of the Gel-family                                   | GelD                       |
| An03g06220         | Predicted GPI-anchored protein. Putative 1,3-beta-glucanosyltransferase GH72; member of the Gel-family                                   | GelE                       |
| An16g06120         | Predicted GPI-anchored protein. Putative 1,3-beta-glucanosyltransferase GH72; member of the Gel-family                                   | GelF                       |
| An10g00400         | Predicted GPI-anchored protein. Putative 1,3-beta-glucanosyltransferase GH72; <i>A. fumigatus</i> Gel1-like                              | GelA                       |
| An08g07350         | Predicted GPI-anchored protein. Putative 1,3-beta-glucanosyltransferase GH72; <i>A. fumigatus</i> Gel2-like                              | GelB                       |
| An02g09050         | Predicted GPI-anchored protein. Putative 1,3-beta-glucanosyltransferase GH72; member of the Gel-family                                   | GelG                       |
| <b>Bgl-family</b>  |                                                                                                                                          |                            |
| An08g03580         | Putative beta-1,3-glucanosyltransferase GH17; <i>A. fumigatus</i> Bgt1-like                                                              | BgtA                       |
| An03g05290         | Predicted GPI-anchored protein. Putative beta-1,3-glucanosyltransferase GH17; member of the AfBgt1-family                                | BgtB                       |
| An07g04650         | Putative beta-1,3-glucanosyltransferase GH17; member of the AfBgt1-family                                                                | BgtC                       |
| An06g01530         | Putative beta-1,3-glucanosyltransferase GH17; member of the AfBgt1-family                                                                | BgtD                       |
| An16g07040         | Putative beta-1,3-glucanosyltransferase GH17; member of the AfBgt1-family                                                                | BgtE                       |
| <b>Crh1-family</b> |                                                                                                                                          |                            |
| An11g01540         | Putative transglycosidase of GH16-family involved in cell wall biosynthesis; ScCrh1-like                                                 | CrhA                       |
| An01g11010         | Predicted GPI-anchored protein. Putative transglycosidase of GH16-family involved in cell wall biosynthesis; member of the ScCrh1-family | CrhD                       |
| An13g02510         | Predicted GPI-anchored protein. Putative transglycosidase of GH16-family involved in cell wall biosynthesis; member of the ScCrh1-family | CrhE                       |
| An16g02850         | Putative transglycosidase of GH16-family involved in cell wall biosynthesis; member of the ScCrh1-family                                 | CrhF                       |
| An15g05350         | Putative transglycosidase of GH16-family involved in cell wall biosynthesis; member of the ScCrh1-family                                 | CrhG                       |
| An07g07530         | Predicted GPI-anchored protein. Putative transglycosidase of GH16-family involved in cell wall biosynthesis; ScCrh2-like                 | CrhB                       |
| An07g01160         | Predicted GPI-anchored protein. Putative transglycosidase of GH16-family involved in cell wall biosynthesis; member of the ScCrh1-family | CrhC                       |
| An01g03090         | Predicted GPI-anchored protein. Putative endo-beta-1,3-glucanase GH81-family; ScEng1-like                                                | EngA                       |
| An18g04100         | Putative exo-beta-1,3-glucanase (GH5-family); ScExg1-like                                                                                | ExgA                       |
| An11g07660         | Putative exo-beta-1,3-glucanase (GH5-family); member of the ScExg1-family                                                                | ExgB                       |
| An08g01100         | Putative exo-beta-1,3-glucanase (GH5-family); member of the ScExg1-family                                                                | ExgC                       |
| An06g02060         | Putative exo-beta-1,3-glucanase (GH5-family); member of the ScExg1-family                                                                | ExgD                       |
| An01g12450         | Putative exo-beta-1,3-glucanase (GH55-family); related to <i>Coniothyrium minitans</i> exo-1,3-glucanase (Cmg1)                          | BxgA                       |

|                         |                                                                                                                   |       |
|-------------------------|-------------------------------------------------------------------------------------------------------------------|-------|
| An02g13180              | Putative exo-beta-1,3-glucanase (GH55-family); related to Coniothyrium minitans exo-1,3-glucanase (Cmg1)          | BgxB  |
| An19g00090              | Putative exo-beta-1,3-glucanase (GH55-family); related to Coniothyrium minitans exo-1,3-glucanase (Cmg1)          | BgxC  |
| <b>Others</b>           |                                                                                                                   |       |
| An06g01550              | Putative catalytic subunit beta1,3-glucan synthase complex; ScFks1-like                                           | FksA* |
| An18g05980              | Putative Rho-related GTPase; ScRho1-like                                                                          | RhoA  |
| An14g00800              | Putative regulatory component beta1,3-glucan synthesis; ScHkr1-like                                               | HkrA  |
| An17g02120              | Putative regulatory component beta1,3-glucan synthesis; ScKnr4-like                                               | KnrA  |
|                         |                                                                                                                   |       |
|                         | <b>Alpha-1,3-glucan synthesis and processing</b>                                                                  |       |
| <b>Ags-family</b>       |                                                                                                                   |       |
| An04g09890              | Putative catalytic subunit alpha1,3-glucan synthase complex; SpAgs1-like                                          | AgsA* |
| An02g03260              | Putative catalytic subunit alpha1,3-glucan synthase complex; SpAgs1-like                                          | AgsD* |
| An09g03070              | Putative catalytic subunit alpha1,3-glucan synthase complex; SpAgs1-like                                          | AgsE* |
| An12g02450              | Putative catalytic subunit alpha1,3-glucan synthase complex; SpAgs1-like                                          | AgsC* |
| An15g07810              | Putative catalytic subunit alpha1,3-glucan synthase complex; SpAgs1-like                                          | AgsB* |
| An16g04200              | Putative Rho-related GTPase; ScRho2-like and SpRho2-like                                                          | RhoB  |
| <b>Agt-family</b>       |                                                                                                                   |       |
| An12g02460              | Putative GPI-anchored amylase-like protein (GH13-family) with possible function in alpha1,3-1,4-glucan processing | agtB  |
| An15g07800              | Putative GPI-anchored amylase-like protein (GH13-family) with possible function in alpha1,3-1,4-glucan processing | agtC  |
| An09g03100              | Putative GPI-anchored amylase-like protein (GH13-family) with possible function in alpha1,3-1,4-glucan processing | agtA  |
| <b>Agn-family</b>       |                                                                                                                   |       |
| An06g00510              | Putative alpha-1,3-glucanase GH71; SpAgn1-like                                                                    | AgnA  |
| An07g08640              | Predicted GPI-anchored protein. Putative alpha-1,3-glucanase GH71; member of the SpAgn1-family                    | AgnB  |
| An09g06260              | Putative alpha-1,3-glucanase GH71; member of the SpAgn1-family                                                    | AgnC  |
| An08g09610              | Putative alpha-1,3-glucanase GH71; member of the SpAgn1-family                                                    | AgnD  |
| An15g04760              | Putative alpha-1,3-glucanase GH71; member of the SpAgn1-family                                                    | AgnE  |
| An12g01800              | Putative alpha-1,3-glucanase GH71; member of the SpAgn1-family                                                    | AgnF  |
| An06g00810              | Putative alpha-1,3-glucanase GH71; member of the SpAgn1-family                                                    | AgnG  |
|                         |                                                                                                                   |       |
|                         | <b>Chitin synthesis and processing</b>                                                                            |       |
| <b>Chitin synthases</b> |                                                                                                                   |       |

|                   |                                                                                                                                  |      |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|------|
| An02g02360        | Putative chitin synthase with a myosin motor domain ClassV; EnCsmA-like                                                          | CsmA |
| An02g02340        | Putative chitin synthase with a myosin motor domain ClassV; EnCsmA-like                                                          | CsmB |
| An09g02290        | Putative chitin synthase ClassIV; EnChsD-like                                                                                    | ChsD |
| An09g04010        | Putative chitin synthase ClassIII; EnChsB-like                                                                                   | ChsB |
| An12g10380        | Putative chitin synthase ClassIII; EnChsB-like                                                                                   | ChsE |
| An08g05290        | Putative chitin synthase ClassVI;                                                                                                | ChsG |
| An03g06360        | Putative chitin synthase ClassIII; EnChsB-like                                                                                   | ChsF |
| An14g00660        | Putative chitin synthase ClassI; EnChsC-like                                                                                     | ChsC |
| An07g05570        | Putative chitin synthase ClassII; EnChsA-like                                                                                    | ChsA |
| <b>Chitinases</b> |                                                                                                                                  |      |
| An09g06400        | Predicted GPI-anchored protein. Putative ClassIII Chitinase (GH18); ScCts1-like                                                  | CtcA |
| An09g05920        | Putative ClassIII Chitinase (GH18); ScCts1-like                                                                                  | CtcB |
| An02g07020        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcA |
| An08g09030        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcB |
| An04g04670        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcC |
| An01g05360        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcD |
| An15g00840        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcE |
| An11g01160        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcF |
| An19g00100        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcG |
| An14g07420        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcH |
| An02g13580        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcI |
| An11g05860        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcJ |
| An12g05330        | Putative ClassV Chitinase (GH18); ScCts2-like                                                                                    | CfcK |
|                   |                                                                                                                                  |      |
|                   | <b>Beta-1,6-glucan synthesis and processing</b>                                                                                  |      |
| An02g03980        | Putative transglycosidase required for beta-1,6 glucan biosynthesis; ScKre6-like                                                 | KslA |
| An05g00130        | Putative glycoprotein required for beta-1,6 glucan biosynthesis; ScKre9-like                                                     | Kn1A |
| An07g01540        | Putative protein involved in beta-1,6 glucan biosynthesis; ScRot1-like                                                           | RotA |
|                   |                                                                                                                                  |      |
|                   | <b>Other enzymes with a putative function in cell wall biosynthesis</b>                                                          |      |
| <b>Dfg-family</b> |                                                                                                                                  |      |
| An18g01410        | Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like                                 | DfgA |
| An03g00740        | Predicted GPI-anchored protein. Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like | DfgB |
| An14g03520        | Predicted GPI-anchored protein. Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like | DfgC |
| An01g06500        | Predicted GPI-anchored protein. Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP                            | DfgD |

|                            |                                                                                                                                                         |      |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|                            | incorporation; ScDfg5-like                                                                                                                              |      |
| An16g08090                 | Predicted GPI-anchored protein. Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like                        | DfgE |
| An06g00360                 | Predicted GPI-anchored protein. Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like                        | DfgF |
| An02g02660                 | Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like                                                        | DfgG |
| An11g01240                 | Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like                                                        | DfgH |
| An12g05930                 | Putative endo-mannanase (GH76-family) with a possible role in GPI-CWP incorporation; ScDfg5-like                                                        | DfgI |
| An04g01230                 | Predicted GPI-anchored protein. Putative enzyme involved in cell wall biosynthesis with unknown function; ScEcm33-like                                  | EcmA |
|                            |                                                                                                                                                         |      |
|                            | <b><i>Aspergillus niger</i> proteins involved in cell wall integrity pathway.</b>                                                                       |      |
| <b>WSC-family</b>          |                                                                                                                                                         |      |
| An01g09460                 | Putative plasma membrane sensor-transducer of the stress-activated PKC1-MPK1 kinase pathway involved in maintenance of cell wall integrity; ScWsc1-like | WscA |
| An07g04070                 | Putative plasma membrane sensor-transducer of the stress-activated PKC1-MPK1 kinase pathway involved in maintenance of cell wall integrity; ScWsc1-like | WscB |
| <b>Mtl-family</b>          |                                                                                                                                                         |      |
| An02g06660                 | Putative plasma membrane sensor required for cell wall integrity signalling; ScMtl1like                                                                 | MtlA |
| An04g10140                 | Putative plasma membrane sensor required for cell wall integrity signalling; ScMtl1like                                                                 | MtlB |
| <b>Rho-GEFs</b>            |                                                                                                                                                         |      |
| An07g05090                 | Putative Rho1-Guanine Exchange Factor involved in CWI signalling with strong similarity to ScRom1                                                       | RefA |
| An15g02900                 | Putative Rho1-Guanine Exchange Factor with similarity to ScRom1                                                                                         | RefB |
| An04g05150                 | Putative Cdc42-Guanine Exchange Factor with strong similarity to ScCdc24                                                                                | CefA |
| An08g10040                 | Putative Cdc42-Guanine Exchange Factor with weak similarity to ScCdc24                                                                                  | CefB |
| <b>Rho-GAPs</b>            |                                                                                                                                                         |      |
| An10g00490                 | Putative Rho1-GTPase Activating protein (GAP) involved in CWI signaling and actin organization with similarity to ScSag7                                | RapA |
| An11g10060                 | Putative Rho1-GTPase Activating protein (GAP) involved in CWI signaling with similarity to ScBem2                                                       | RapB |
| An15g03040                 | Putative Rho1-GTPase Activating protein (GAP) involved in beta1,3-glucan synthesis with strong similarity to ScLrg1                                     | RapC |
| An13g01020                 | Putative Rho1-GTPase Activating protein (GAP) with weak similarity to ScBem2                                                                            | RapD |
| An13g00850                 | Putative Rho1-GTPase Activating protein (GAP) with strong similarity to ScRgd2                                                                          | RapE |
| An08g05440                 | Putative Cdc42-GTPase Activating protein (GAP) with similarity to ScRga1                                                                                | CapA |
| An18g06730                 | Putative Cdc42-GTPase Activating protein (GAP) with similarity to ScBem3p                                                                               | CapB |
| <b>Rho-related GTPases</b> |                                                                                                                                                         |      |
| An18g05980                 | Putative Rho-related GTPase; ScRho1-like                                                                                                                | RhoA |

|                                                                |                                                                                               |       |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------|
| An16g04200                                                     | Putative Rho-related GTPase; ScRho2-like and SpRho2-like                                      | RhoB  |
| An14g05530                                                     | Putative Rho-related GTPase; ScRho4-like                                                      | RhoD  |
| An02g14200                                                     | Putative Rho-related GTPase; ScCdc42-like                                                     | CftA* |
| An11g10030                                                     | Putative Rho-related GTPase; HsRac1-like                                                      | RacA* |
| An11g09620                                                     | Putative Rho-related GTPase; ScRho3-like                                                      | RhoC  |
| An18g02400                                                     | Protein kinase C with putative function in CWI signaling                                      | PkcA* |
| <b>MAPKKKs</b>                                                 |                                                                                               |       |
| An02g06830                                                     | MAPKKK with putative function in CWI signalling Bck1; ScBck-like                              | BckA  |
| An17g01280                                                     | MAPKKK with putative function in Pheromone response/pseudohyphal growth pathway; ScSte11-like | SteK  |
| An08g03240                                                     | MAPKKK with putative function in High Osmolarity stress pathway; ScSsk2-like                  | SskB  |
| <b>MAPKKs</b>                                                  |                                                                                               |       |
| An18g03740                                                     | MAPKK with putative function in CWI signalling; ScMkk1-like                                   | MkkA  |
| An11g10690                                                     | MAPKK with putative function in Pheromone response/pseudohyphal growth pathway; ScSte7-like   | SteG  |
| An01g11080                                                     | MAPKK with putative function in High Osmolarity stress pathway; ScPbs2-like                   | PbsB  |
| <b>MAPKs</b>                                                   |                                                                                               |       |
| An01g09520                                                     | MAPK with putative function in CWI signalling; ScMpk-like                                     | MpkA* |
| An08g10670                                                     | MAPK with putative function in Pheromone response/pseudohyphal growth pathway; ScFus3-like    | FusC* |
| An07g03980                                                     | MAPK with putative function in High Osmolarity stress pathway; ScHog1-like                    | HogA  |
| An08g05850                                                     | MAPK with putative function in High Osmolarity stress pathway; ScHog1-like                    | HogB  |
| An18g05270                                                     | MAPK with putative function in High Osmolarity stress pathway; ScHog1-like                    | HogC  |
| <b>MADS-BOX transcription factors</b>                          |                                                                                               |       |
| An02g12210                                                     | MADS-box transcription factor involved in CWI-signalling; ScRImA                              | RImA* |
| An12g08730                                                     | MADS-box transcription factor similar to ScMcm1                                               | McmA  |
|                                                                |                                                                                               |       |
| <b>Predicted hydrophobins in the genome of <i>A. niger</i></b> |                                                                                               | hypA  |
| An01g10940                                                     | Putative hydrophobin;                                                                         | hypB  |
| An03g02360                                                     | Putative hydrophobin; sim. dewA hydrophobin                                                   | hypC  |
| An03g02400                                                     | Putative hydrophobin; sim. dewA hydrophobin                                                   | hypD  |
| An04g08500                                                     | Putative hydrophobin; sim. rodA hydrophobin                                                   | hypE  |
| An07g03340                                                     | Putative hydrophobin; sim. hyp1 hydrophobin ( <i>A. fumigatus</i> )                           | hypF  |
| An15g03800                                                     | Putative hydrophobin; similar to <i>A. niger</i> EST an_3228                                  | hypG  |
| An09g05530                                                     | Putative hydrophobin;                                                                         | hypH  |

<sup>1</sup> Proposed protein abbreviation; those with asterisk were published before.