Additional File 25. CLUSTAL O(1.2.3) multiple sequence alignment of NNP nitrate transporters. Species identification are based on JGI Mycocosm.Numbers after the species identifier indicate the gene id. Aspnid1 = *Aspergillus nidulans*, Aspfu1 = *Aspergillus fumigatus*, Neofi1 = *Aspergillus fischeri*, Aspzo1 = *Aspergillus zonatus*, Aspsy1 = *Aspergillus sydowii*, Aspve1 = *Aspergillus versicolor*, Aspgl1 = *Aspergillus glaucus*, Aspwe1 = *Aspergillus wentii*, Aspcl1 = *Aspergillus clavatus*, Aspac1 = *Aspergillus aculeatus*, Aspca3 = *Aspergillus carbonarius*, Aspbr1 = *Aspergillus brasiliensis*, Aspni DSM 1 = *Aspergillus niger* CBS513.88, Asptu1 = *Aspergillus tubingensis*, Aspfo1 = *Aspergillus luchuensis*, Aspka1 = *Aspergillus luchuensis*, Aspte1 = *Aspergillus terreus*, Aspor1 = *Aspergillus oryzae*, Aspfl1 = *Aspergillus flavus*.

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jgi|Aspnid1|6363|AN0399 NrtB                                    MKPTQVLRLAVAAPDVNPQTRKARSIPVLNPFDLYGRVFFFSWIGFLVAFLSWYAFPPLL
jgi|Aspfu1|1610|Afu1g17470_mRNA                                 ---MEILKLAFASPEINPVNHKARSIPVLNPVDRYGRVFFFSWFGFMVAFLSWYAFPPLL
jgi|Neofi1|2173|7000001156971211                                ---MEMLKLVFASPEINPVNHKARSIPLLNPVDRYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspzo1|58567|e_gw1.2.2008.1                                 ---MEVLRLAFVSPEINPNNRKAKSIPFFNPFDKYGRVYFFSWLGFMVAFLSWYAFPPLL
jgi|Aspnid1|5705|AN1008 NrtA                                    ---MDFAKLLVASPEVNPNNRKALTIPVLNPFNTYGRVFFFSWFGFMLAFLSWYAFPPLL
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                            ---MGFFKSMVASPEVNPNNRKALSIPILNPLDTYGRVFFFSWFGFMLAFLSWYAFPPLL
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                           ---MGFFKLLVASPEVNPSNRKALSIPILNPLDAYGRVFFFSWLGFMLAFLSWYAFPPLL
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                           ---MDFVKLLFISPEVNPSNRKALSIPVFNPFDRYGRVFTFSWLGFMVAFLSWYAFPPLL
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27    -MGMEFFKLFVASPDVDPNTRKAKSIPILNPFDRYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspcl1|7255|7000001156880179                                ---MGFIKSLFVSSEINPSNRKARTIPVLNPFDQYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspfu1|1150|Afu1g12850_mRNA                                 --MMNSLKLLVVSPEINPSNRKARSIPVLNPFDRYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Neofi1|2646|7000001156973616                                ---MNSLKSLVVSPDVNPSNRKARSIPVLNPFDRYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspac1|38369|Genemark1.545_g                                ---MDFVKLLFVSPEINPSNRKAQSIPVLNPFDRYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082                  ---MDYVKLLFVSPEINPSNRKAKSIPIFNPFDKYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71    ---MDYVKLLFVSPEINPSNRKAQSIPILNPFDKYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspni_DSM_1|161829|An08g05670m.01                           ---MDRVKLLFASPEINPSNRKAQSIPVLNPFDKYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Asptu1|112586|e_gw1.1.743.1                                 ---MDHIKLLFVSPEINPSNRKAQSIPILNPFDKYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspfo1|130828|e_gw1.4.716.1                                 ---MDHIKLLFVSPEINPSNRKAQSIPILNPFDKYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspka1_1|18106|AKAW_06633                                   ---MDHIKLLFVSPEVNPSNRKAQSIPILNPFDKYGRVFFFSWLGFMVAFLSWYAFPPLL
jgi|Aspte1|476|ATET_00476                                       ---MESIKLLFLSPEINPSNRKAKSIPVLNPFDQYGRVFFFSWLGFLVAFLSWYAFPPLL
jgi|Aspor1|6220|AO090012000623_mRNA                             ---MDSVKLLFLSPEVNPSNRKAMSIPILNPFDKYGRVYFFSWLGFMVAFLSWYAFPPLL
jgi|Aspfl1|27006|7000001155834032                               ---MDSVKLLFLSPEVNPSNRKARSIPILNPFDKYGRVYFFSWLGFMVAFLSWYAFPPLL
                                                                       :  . : :::* .:** :**.:**.: ****: ***:**::************

jgi|Aspnid1|6363|AN0399 NrtB                                    SVTIKKDLHMSQDDVANSNIVALLGTFVMRFIAGPLCDRFGPRLVFVGLLICGAVPTAMA
jgi|Aspfu1|1610|Afu1g17470_mRNA                                 SVTIKKDLHMTQDQVANSNIVALLGTLLMRFIAGPLCDRFGPRYVFVGCLLGGAIPTAMA
jgi|Neofi1|2173|7000001156971211                                SVTIKKDLHMTQDQVANSNIVALLGTLLMRFIAGPLCDRFGPRYVFVGCLLCGAVPTAMA
jgi|Aspzo1|58567|e_gw1.2.2008.1                                 TDTIKQDLKMTQVDIANSNIVALLATFLVRFVAGPLCDRFGPRLVFVGLLIGGSIPTAMA
jgi|Aspnid1|5705|AN1008 NrtA                                    TVTIRDDLDMSQTQIANSNIIALLATLLVRLICGPLCDRFGPRLVFIGLLLVGSIPTAMA
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                            TVTIRDDLEMSQTQIANSNIIALLATLLVRFVCGPLCDRFGPRLVFIGLLLVGSIPTAMA
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                           TVTIRDDLHMSQTQIANSNIIALLATLLVRFVCGPMCDRFGPRLVFVGLLLVGSIPTAMA
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                           TATIKDDLGMTQQQVANSNIVALLATLIVRLIAGPLCDRFGPRLVFVGLLLCGSIPTAMA
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27    TVTIRQDLHMTQQDVANSNIIALLATFLVRFIAGPLCDRFGPRLVFVGLLLCGSIPTAMA
jgi|Aspcl1|7255|7000001156880179                                TVTIRNDLHMTQQQVANSNIVALLATFLVRFIAGPLCDRFGPRLVFIGLLLCGSIPTAMA
jgi|Aspfu1|1150|Afu1g12850_mRNA                                 TVTIRKDLHMTQQQVANSNIVALLATFLVRFIAGPLCDRFGPRLVFIGLLLCGSIPTAMA
jgi|Neofi1|2646|7000001156973616                                TVTIRKDLHMTQQQVANSNIVALLATFLVRFIAGPLCDRFGPRLVFIGLLLCGSIPTAMA
jgi|Aspac1|38369|Genemark1.545_g                                TVTIRKDLHMTQQDVANSNIVALLATLLVRFVAGPLCDRFGPRLVFIGLLLSGSIPTAMA
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082                  TDTIRQDLHMTQTQVANSNIVALLATLLVRFVAGPLCDRFGPRLVFIGLLLCGSIPTAMA
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71    TDTIRQDLHMTQTQVANSNIVALLATLLVRFIAGPLCDKFGPRLVFIGLLLCGSIPTAMA
jgi|Aspni_DSM_1|161829|An08g05670m.01                           TDTIRQDLNMTETQVANSNIVALLATLLVRFVAGPLCDKFGPRLVFIGLLLCGSIPTAMA
jgi|Asptu1|112586|e_gw1.1.743.1                                 TDTIRQDLKMTETQVANSNIVALLATLLVRFVAGPLCDKFGPRLVFIGLLLCGSIPTAMA
jgi|Aspfo1|130828|e_gw1.4.716.1                                 TDTIRQDLNMTETQVANSNIVALLATLLVRFVAGPLCDKFGPRLVFIGLLLCGSIPTAMA
jgi|Aspka1_1|18106|AKAW_06633                                   TDTIRQDLNMTETQVANSNIVALLATLLVRFVAGPLCDKFGPRLVFIGLLLCGSIPTAMA
jgi|Aspte1|476|ATET_00476                                       TVTISKDLHMTQNDIANSNIVALLATFLVRFVAGPLCDRFGPRYVFIGLLLAGSIPTAMA
jgi|Aspor1|6220|AO090012000623_mRNA                             TVTIRKDLKMTQPEVANSNIVALLATLLVRFVAGPLCDRFGPRLVFIGLLLCGSIPTAMA
jgi|Aspfl1|27006|7000001155834032                               TVTIRKDLKMTQPEVANSNIVALLATLLVRFVAGPLCDRFGPRLVFIGLLLCGSIPTAMA
                                                                : ** .** *:: ::*****:***.*:::*::.**:**:**** **:* *: *::*****
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jgi|Aspnid1|6363|AN0399 NrtB                                GLVTTPQGLIALRFFVGILGATFVPCQVWCTGFFDKNIVGTANSLAGGFGNAGGGITYFV
jgi|Aspfu1|1610|Afu1g17470_mRNA                             GLVTSPQGLIALRFFIGILGATFVPCQVWCTGFFDKNVVGTANALAGGFGNGGGGITYFV
jgi|Neofi1|2173|7000001156971211                            GLVTSPQGLIALRFFIGILGATFVPCQVWCTGFFDKNVVGTANALAGGFGNAGGGITYFV
jgi|Aspzo1|58567|e_gw1.2.2008.1                             GLVTTPSGLIALRFFVGILGATFVPCQVWCTGFFDKNIVGTANALAAGWGNAGGGITYFV
jgi|Aspnid1|5705|AN1008 NrtA                                GLVTSPQGLIALRFFIGILGGTFVPCQVWCTGFFDKSIVGTANSLAAGLGNAGGGITYFV
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                        GLVTTPQGLIALRFFIGILGGTFVPCQVWCTGFFDKKVVGTANSLAAGLGNAGGGITYFV
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                       GLVTTPEGLIALRFFIGILGGTFVPCQVWCTGFFDKKVVGTANSLAAGLGNAGGGITYFV
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                       GLVTNPQGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANSLAGGWGNSGGGITYFI
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27 GLVTTPKGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANSLAAGWGNSGGGITYFV
jgi|Aspcl1|7255|7000001156880179                            GLVTNPNGLIALRFFIGILGGTFVPCQVWCTGFFDKNIIGTANSLAAGWGNAGGGITYFL
jgi|Aspfu1|1150|Afu1g12850_mRNA                             GLVTTPNGLIALRFFVGILGGTFVPCQVWCTGFFDKNIVGTANSLAAGWGNAGGGITYFV
jgi|Neofi1|2646|7000001156973616                            GLVTTPNGLIALRFFVGILGGTFVPCQVWCTGFFDKNIVGTANSLAAGWGNAGGGITYFV
jgi|Aspac1|38369|Genemark1.545_g                            GLVTTPKGLIALRFFIGILGGTFVPCQVWCTGFFDKKIVGMANALAGGWGNAGGGITYFV
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082              GLVTTPEGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGAANALAGGWGNSGGGITFFV
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71 GLVTTPNGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGAANALAGGWGNAGGGITFFV
jgi|Aspni_DSM_1|161829|An08g05670m.01                       GLVTTPNGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANALAGGWGNAGGGITFFV
jgi|Asptu1|112586|e_gw1.1.743.1                             GLVTTPNGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANALAGGWGNAGGGITFFV
jgi|Aspfo1|130828|e_gw1.4.716.1                             GLVTTPNGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANALAGGWGNAGGGITFFV
jgi|Aspka1_1|18106|AKAW_06633                               GLVTTPNGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANALAGGWGNAGGGITFFV
jgi|Aspte1|476|ATET_00476                                   GLVTNSRGLIALRFFVGVLGGTFVPCQVWCTGFFDKKIVGTANSLAAGWGNAGGGITYFV
jgi|Aspor1|6220|AO090012000623_mRNA                         GLVTNAQGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANSLAAGWGNAGGGITYFV
jgi|Aspfl1|27006|7000001155834032                           GLVTNAQGLIALRFFVGILGGTFVPCQVWCTGFFDKKIVGTANSLAAGWGNAGGGITYFV
                                                            ****.  ********:*:**.***************.::* **:**.* **.*****:*:

jgi|Aspnid1|6363|AN0399 NrtB                                MPAIYDSFVHDRGLTPHKAWRVSYIVPFIIIVSIALAMLFTCPDTPTGKWADREKT----
jgi|Aspfu1|1610|Afu1g17470_mRNA                             MPAIYDSLVHSQGLTPHRAWRVAYVAPFIIIVTLALAMLFLCEDTPTGKWSQRNDN----
jgi|Neofi1|2173|7000001156971211                            MPAIYDSLVHSQGLTPHRAWRVAYVVPFIIIVTLALSMLFLCEDTPTGKWSQRNDN----
jgi|Aspzo1|58567|e_gw1.2.2008.1                             MPAIFDSLVHSQGLSAHKAWRVAYIVPFVLINVIALAMLFTCEDTPTGKWSERQIWMKEE
jgi|Aspnid1|5705|AN1008 NrtA                                MPAIFDSLIRDQGLPAHKAWRVAYIVPFILIVAAALGMLFTCDDTPTGKWSERHIWMKED
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                        MPAIFDSLVHNQGLPAHKAWRVAYIVPFILIVAAALGMLFTCDDTPTGPWSERHIWTKEE
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                       MPAIFDSLVHSQGLAAHKAWRVAYIVPFILIVATALGMLFTCDDTPTGPWSQRHIWTKEE
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                       MPTVYDSLVHSQGLAPHKAWRVAYVIPFIIIVALAVAMLFTCDDTPMGKWSERHIWMKEN
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27 MPAIYDSLVHTSGLPPHKAWRVSYVVPFIIIVSLALCMLFTCEDTPTGKWSERHIWMKDQ
jgi|Aspcl1|7255|7000001156880179                            MPAIFDSLVHSRGLAPHKAWRVAYVVPFCIIVVLALCMLLTCEDTPTGKWSERHIWMKES
jgi|Aspfu1|1150|Afu1g12850_mRNA                             MPAIYDSLVHSQGLAPHKAWRVAYIVPFIIIVVLALCMLLICEDTPTGKWSERHIWMKEN
jgi|Neofi1|2646|7000001156973616                            MPAIYDSLVHSQGLAPHKAWRVAYIVPFIIIVVLALCMLLICEDTPTGKWSERHIWMKEN
jgi|Aspac1|38369|Genemark1.545_g                            MPAIYDSLVYSQGLTPHKAWRVAFIVPFIIIVVIAVAMLFLCEDTPTGKWSERHLWAREM
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082              MPAVYDSLVNVQGLTPHKAWRVSYIVPFIIIVAVALTMLFVCEDTPTGKWSERHLWVKEA
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71 MPAVYDSLVKAQGLTPHKAWRVAYIVPFIIIVGVALTMLFVCEDTPTGKWSERHLWVKEA
jgi|Aspni_DSM_1|161829|An08g05670m.01                       MPAVYDSLVKVQGLTPHKAWRVAYIVPFIIIVGVALTMLFVCEDTPTGKWSERHLWVKEA
jgi|Asptu1|112586|e_gw1.1.743.1                             MPAVYDSLVKVQGLPPHKAWRVAYIVPFIIIVGVALTMLFVCEDTPTGKWSERHLWVKEA
jgi|Aspfo1|130828|e_gw1.4.716.1                             MPAVYDSLVKVQGLPPHKAWRVAYIVPFIIIVGVALTMLFVCEDTPTGKWSERHLWVKEA
jgi|Aspka1_1|18106|AKAW_06633                               MPAVYDSLVKVQGLPPHKAWRVAYIVPFIIIVGVALTMLFVCEDTPTGKWSERHLWVKEA
jgi|Aspte1|476|ATET_00476                                   MPAIFDSLVHAQGLPAHKAWRVAYVVPFIIIVALALGMLFTCEDTPTGKWSERHLWASEN
jgi|Aspor1|6220|AO090012000623_mRNA                         MPAIFDSLVHNQSLPAHKAWRVAYIVPFIIIVVIAVAMFFTCEDTPTGKWSERHLWAEET
jgi|Aspfl1|27006|7000001155834032                           MPAIFDSLVHNQGLPAHKAWRVAYIVPFIIIVVIAVAMFFTCEDTPTGKWSERHLWAEET
                                                            **:::**::   .*  *:****::: ** :*   *: *:: * *** * *::*.
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jgi|Aspnid1|6363|AN0399 NrtB                                    ----SGQSIVDLSSTPNAS----SANSINI---SSDEKKAVHPE--VTDSEAQVHVRAGQ
jgi|Aspfu1|1610|Afu1g17470 mRNA                                 -NPVMQSNIVDLHRPSA----SGTPSSINVST--VPEKKGVATPQ-IVDTEAQPVID-IS
jgi|Neofi1|2173|7000001156971211                                -NPIIQSNIVDLHRSSG----SGAPSSTNVST--VPEKKGVSTPQ-IVDTEAQPVID-IS
jgi|Aspzo1|58567|e_gw1.2.2008.1                                 HTTGS-ENVIDLDTQSP-DGPSGSPSVMNVPT--DIEKKGAQTPV-TIDRE-AQTGQ-VD
jgi|Aspnid1|5705|AN1008 NrtA                                    TQTASKGNIVDLSSGAQSSRPSGPPSIIAYAIPDVE-KKGTETPL-EPQ--SQAIGQ-FD
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                            T--RSQGNIVDLNSGNQSTQPSGSPSIITHVAVDVE-KKGVQSPI-ESDGTTQVMGQ-LD
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                           T--HSQGNIVDLNSGSQSAQPSGSPSIITNIAVDVE-KKGIQSPI-ESDGT-QVMGQ-LD
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                           SPQAANANIVDITSDNPSSRTSGAPSISQVVAVSDVEKKGAETPNNNIDTEAQTTGQ-VG
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27   E--VPEGNIVNINSVNPS----SPPSVNNFMT-PDLEKKGAQSPE-VVDQ-GQAVGQ-VD
jgi|Aspcl1|7255|7000001156880179                                A--ESDGNIISLDSGSPSVRPSGPPS-INLPT-PPTEKKGVQTPQ-VVDPEAQAVGE-VD
jgi|Aspfu1|1150|Afu1g12850 mRNA                                 N--ESQANIVNLMSGSPSTRPSGPPS-INIST-PQSEKKGAQTPQ-MVDPEAQAVGQ-VD
jgi|Neofi1|2646|7000001156973616                                N--ESQANIVNLMSGSPSTRPSGPPS-INIST-PQSEKKGAQTPQ-MVDPEAQAVGQ-VD
jgi|Aspac1|38369|Genemark1.545_g                                AG-ESDGNIVDLKADMRSAQPSSTPSMTNVMA-DVEKKG-AQTPV-SLGSNSQTIAE-FD
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082                  T--GSDGNIIDINSGTLSS-PSKSPSMSDVMG-DVEKKGGTQTPV-SLEPESQRIGQ-FD
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71   T--ESEGNIIDINSGIPSTRESKAPSVSDMMA-DVEKKGGAQTPM-SLGAESQQIGQ-FD
jgi|Aspni_DSM_1|161829|An08g05670m.01                           T--ESEGKIINVNSGIPS----KAPSVSDMMA-DVEKKGGAQTPI-SLGAESQQIGQ-FD
jgi|Asptu1|112586|e_gw1.1.743.1                                 T--ESEGNIIDINSGIPS----KAPSVSDMMA-DVEKKGGAQTPM-SLGAESQQIGQ-FD
jgi|Aspfo1|130828|e_gw1.4.716.1                                 T--ESEGNIIDINSGIPS----KAPSVSDMMA-DVEKKGGAQTPM-SLGAESQQIGQ-FD
jgi|Aspka1_1|18106|AKAW_06633                                   T--ESEGNIIDINSGIPS----KAPSVSDMMA-DVEKKGGAQTPM-SLGAESQQIGQ-FD
jgi|Aspte1|476|ATET_00476                                       D--GSDPNIVDLTSGRTSVRPSVAPSLTNIAV-DVEKKGTDTPVSTALDREPQMLGQ-MD
jgi|Aspor1|6220|AO090012000623_mRNA                             S--RFEGNIVNINSGISSSHPSSPPSTTNIVA-DLEKKGNPSPPES----IAPMPGQ-LE
jgi|Aspfl1|27006|7000001155834032                               S--RFEGNIVNINSGISSSHPSSPPSTTNIVA-DLEKKGNPSPPES----IAPMPGQ-LE
                                                                       .::.:             .           *

jgi|Aspnid1|6363|AN0399 NrtB                                    IESSDAVIEAPTIKRYLSIALDPSALAVAVPYACSFGAELAINSILGAYYLLNFPLLGQT
jgi|Aspfu1|1610|Afu1g17470 mRNA                                 IANNET-IKNPTLREALRVAFSLPTLALALPYACSFGAELAINSMLGAYYLKNFPSLGQT
jgi|Neofi1|2173|7000001156971211                                LANNEM-IQKPTLREALRVIFSLPTLALALPYACSFGAELAINSVLGAYYLKNFPSLGQT
jgi|Aspzo1|58567|e_gw1.2.2008.1                                 FYNREV-VVAPTFKEALGVIFSLSTMAVALPYACSFGTELALDSILGSYYTDNFPNLGQT
jgi|Aspnid1|5705|AN1008 NrtA                                    AFRANA-VASPSRKEAFNVIFSLATMAVAVPYACSFGSELAINSILGDYYDKNFPYMGQT
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                            ALRTDA-VIAPSRKEAMSVVLSLASLAVAIPYACSFGSELAINSILGDYYDKNFPYMGQT
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                           AIQTDA-VVSPSRKEAMKVVFSLASLAVAIPYACSFGSELAINSILGDYYDKNFPYMGQT
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                           ILDTTTTPPTPSHKETLSIMFSLSTLAVAVPYACSFGSELSINSILGDYYAQNFPYMSQT
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27   IFKKDT-VVAPSRKEAMNVILSLSTFAVAIPYACSFGAELSVNSILGDYYSENFPHMGQT
jgi|Aspcl1|7255|7000001156880179                                VLRTDA-VVSPSRREILNVLLSLSTAAVAIPYACSFGSELAINSILGEFYSDNFPHLGQT
jgi|Aspfu1|1150|Afu1g12850 mRNA                                 ILRADT-VVAPSRKEVMNVLLSLSTAAVAIPYACSFGSELAINSILGEFYSKNFPDMSQT
jgi|Neofi1|2646|7000001156973616                                ILRTDT-VVAPSRKEVMNVLLSLSTAAVAIPYACSFGSELAINSILGEFYSKNFPDMGQT
jgi|Aspac1|38369|Genemark1.545_g                                AIRTDT-VVAPTRKEAMGVLFSLSTAAVAIPYACSFGAELAINSNLGEYYSANFPQMGQT
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082                  ALRTDM-VVAPTRKEALNVLFSLSTAAVAIPYACSFGAELAIESVLANYYLDNFPSMGQT
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71   ALRTDT-VVAPTRKEALNVLFSMFTAAVAIPYACTFGAELAIESVLANYYVANFPSMGQT
jgi|Aspni_DSM_1|161829|An08g05670m.01                           ALRTDT-VVAPTRKEALNVLFSMFTAAVAIPYACTFGAELAIESVLANYYVANFPSMGQT
jgi|Asptu1|112586|e_gw1.1.743.1                                 ALRTDT-VVAPTRKEALNVLFSMFTAAVAIPYACTFGAELAIESVLANYYVANFPSMGQT
jgi|Aspfo1|130828|e_gw1.4.716.1                                 ALRTDT-VVAPTRKEALNVLFSMFTAAVAIPYACTFGAELAIESVLANYYVANFPSMGQT
jgi|Aspka1_1|18106|AKAW_06633                                   ALRTDT-VVAPTRKEALNVLFSMFTAAVAIPYACTFGAELAIESVLANYYVANFPSMGQT
jgi|Aspte1|476|ATET_00476                                       ALRTET-VVAPSFKEALRVIFNLHTAAVALPYACSFGAELSINSILGKYYADNFPHMGQT
jgi|Aspor1|6220|AO090012000623_mRNA                             SLRTDT-VVAPTFKEAMNVLLSLSTAAVAIPYACSFGAELAINSILGDFYAENFPYMGQT
jgi|Aspfl1|27006|7000001155834032                               SLRTDT-VVAPTFKEAMNVLLSLSTAAVAIPYACSFGAELAINSILGDFYAENFPYMGQT
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jgi|Aspnid1|6363|AN0399 NrtB                                    QSGRWASMFGLVNVVFRPMGGFIADLIYARTNSVWAKKMWLVVLGLAMSGMAILIGFLDP
jgi|Aspfu1|1610|Afu1g17470 mRNA                                 KSGRWAAMFGLVNVVFRPAGGFMADVIYRYTRSVWGKKVWLVCLGVCMGAAALAVGLLDP
jgi|Neofi1|2173|7000001156971211                                KSGRWAAMFGLVNVVFRPAGGFMADLIYRYTQSVWGKKVWLVCLGVCMGGSALAVGLLDP
jgi|Aspzo1|58567|e_gw1.2.2008.1                                 RSGQWAAMFGLLNVVFRPAGGLVADFLYKRTNSIWAKKIWLVSLSIIMGAFLLAIGLTDP
jgi|Aspnid1|5705|AN1008 NrtA                                    QTGKWAAMFGFLNIVCRPAGGFLADFLYRKTNTPWAKKLLLSFLGVVMGAFMIAMGFSDP
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                            QTGKWAAMFGFLNIVCRPAGGFLADILYNYSETLWSKKLLLSFLGVVMGAFMLAMGLSDP
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                           QTGKWAAMFGFLNVICRPAGGFLADILYNYSETLWSKKLLLSFLGVIMGAFMLAMGLSDP
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                           QTGQWAAMFGLLNIVCRPAGGFVADLVYRYTETVWSKKILLVFLGVIMGAFQLAMGLSDP
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27   RTGQWAAMFGLLNVVFRPAGGFLADVLYQYTDSVWSKKLLLSFLGVVMGAFLLALGLADP
jgi|Aspcl1|7255|7000001156880179                                ESGRWAAMFGLLNVVFRPAGGFIADMLYNHTQAVWSKKLFMSFLGIVMGAFLLALGLTDP
jgi|Aspfu1|1150|Afu1g12850 mRNA                                 ESGRWAAMFGLLNVVFRPAGGFIADMLYKYTGAVWSKKVLLSFLGVVMGAFQLAIGLADP
jgi|Neofi1|2646|7000001156973616                                ESGRWAAMFGLLNVVFRPAGGFIADMLYKYTGAVWSKKLLLSFLGVVMGAFQLAIGLTDP
jgi|Aspac1|38369|Genemark1.545_g                                KTGQWAAMFGLLNVVFRPAGGFLADLLLRRTQNLWSKKILLVFLGVIMGAFELAIGLTNP
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082                  ESGRWAAMFGLLNIVCRPAGGFLADYLYRSTQSLWSKKILLVFLGVVMGAFQLAIGFTNP
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71    ESGRWAAMFGLLNIICRPAGGFLADYLYRVTQSLWSKKVLLVFLGLVTGAFQLAIGLTNP
jgi|Aspni_DSM_1|161829|An08g05670m.01                           ESGRWAAMFGLLNIICRPAGGFLADFLYRATQSLWSKKILLVCLGLVTGAFQLAIGLTNP
jgi|Asptu1|112586|e_gw1.1.743.1                                 ESGRWAAMFGLLNIICRPAGGFVADFLYRTTQSLWSKKILLVSLGLITGAFQLAIGLTNP
jgi|Aspfo1|130828|e_gw1.4.716.1                                 ESGRWAAMFGLLNIICRPAGGFVADFLYRTTQSLWSKKILLVSLGLITGAFQLAIGLTNP
jgi|Aspka1_1|18106|AKAW_06633                                   ESGRWAAMFGLLNIICRPAGGFVADFLYRTTQSLWSKKILLVSLGLITGAFQLAIGLTNP
jgi|Aspte1|476|ATET_00476                                       KSGQWAAMFGLLNVIFRPAGGFIADLLYRHTDSVWSKKIFLSFLGVVMGAFQVAMGLTNP
jgi|Aspor1|6220|AO090012000623_mRNA                             KTGQWAAMFGLLNVICRPAGGFIADLLYRHTQSVWSKKILLSFLGVGMGAFQLALGFSNP
jgi|Aspfl1|27006|7000001155834032                               KTGQWAAMFGLLNVICRPAGGFIADLLYRHTQSVWSKKILLSFLGVGMGAFQLALGFSNP
                                                                .:*:**:***::*:: ** **::** :   :   *.**: :  *.:  ..  : :*: :*

jgi|Aspnid1|6363|AN0399 NrtB                                    HRESVMFGLVVLMAFFIAASNGANFAIVPHVHPSANGIVSGIVGGMGNFGGIIFAIVFRY
jgi|Aspfu1|1610|Afu1g17470 mRNA                                 KREGLMFGLVVLMAFFIAASNGANFAIVPHVHPTANGIVSGFVGGMGNFGGIAFAIIFRY
jgi|Neofi1|2173|7000001156971211                                KSEGLMFGLVVLMAFFIAASNGANFAIVPHVHPTANGIVSGIVGGMGNFGGIVFAIIFRY
jgi|Aspzo1|58567|e_gw1.2.2008.1                                 KSQSTMFGLAAGLAFFTEAANGANFAVVPHVHPFANGIVSGAVGGMGNFGGIIFAIVFRY
jgi|Aspnid1|5705|AN1008 NrtA                                    KSEATMFGLTAGLAFFLESCNGAIFSLVPHVHPYANGIVSGMVGGFGNLGGIIFAIIFRY
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                            TSEATMFGLTAGLAFFLEACNGAIFALVPHVHPFANGIVSGIVGGFGNLGGIIFAIIFRY
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                           TSEATMFGLTAGLAFFLEACNGANFALVPHVHPFANGIVSGMVGGFGNLGGIIFAIIFRY
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                           KDEATMFGLTAGLAFFLEACNGANFALVPHVHSFANGIVSGTVGGMGNLGGIIFAIIFRY
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27   KTEAAMFGLSAGLAFFLESCNGVIFAVVPHVHPFANGIVSGVVGGMGNLGGIIFAIIFRY
jgi|Aspcl1|7255|7000001156880179                                KSEATMFGLTAGLAFFLEACNGANFAVVPHVHPFANGVVSGAVGGMGNFGGIIFAIIFRY
jgi|Aspfu1|1150|Afu1g12850 mRNA                                 RSEATMFGLTAGLAFFLEACNGTNFAVVPHVHPFANGVVSGAVGGMGNLGGIIFAIIFRY
jgi|Neofi1|2646|7000001156973616                                RSEATMFGLTAGLAFFLEACNGANFAVVPHVHPFANGVVSGAVGGMGNLGGIIFAIIFRY
jgi|Aspac1|38369|Genemark1.545_g                                KSESTMFGLIAGLAFFLESCNGANFALVPHVYPFANGVVSGAVGGMGNLGGIIFAIIFRY
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082                  KSEATMFGLMAGLAFFLEACNGAIFSLVPHVYPFANGVVSGAVGGMGNLGGIIFAIIFRY
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71    KSESTMFGLMAGLAFFLEACNGAIFSLVPHVYPFANGVVSGAVGGMGNFGGIIFAIIFRY
jgi|Aspni_DSM_1|161829|An08g05670m.01                           KSEATMFGLMAGLAFFLEACNGAIFSLVPHVYPFANGVVSGAVGGMGNFGGIIFAIIFRY
jgi|Asptu1|112586|e_gw1.1.743.1                                 KTEATMFGLLAGLAFFLEACNGAIFSLVPHVYPFANGVVSGAVGGMGNFGGIIFAIIFRY
jgi|Aspfo1|130828|e_gw1.4.716.1                                 KTEATMFGLMAGLAFFLEACNGAIFSLVPHVYPFANGVVSGAVGGMGNFGGIIFAIIFRY
jgi|Aspka1_1|18106|AKAW_06633                                   KTEATMFGLMAGLAFFLEACNGAIFSLVPHVYPFANGVVSGAVGGMGNFGGIIFAIIFRY
jgi|Aspte1|476|ATET_00476                                       KTEATMFGLTAGMAFFLEAANGANFAVVPHVYPFANGIVSGAVGGMGNFGGIIGAIIFRY
jgi|Aspor1|6220|AO090012000623_mRNA                             KSEATMFGLTAGLAFFLEACNGANFAVVPHVHPFANGIVSGAVGGMGNLGGIIFAIIFRY
jgi|Aspfl1|27006|7000001155834032                               KSEATMFGLTAGLAFFLEACNGANFAVVPHVHPFANGIVSGAVGGMGNLGGIIFAIIFRY
                                                                  :. **** . :***  :.**. *::****:  ***:*** ***:**:***  **:***
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jgi|Aspnid1|6363|AN0399 NrtB                                      NGTQYHRSLWIIGFIILGCTLFFSWVRPVPKQNH*---
jgi|Aspfu1|1610|Afu1g17470 mRNA                                   NGTHYDRALWIIGAIVAGVNICVSWIRPVPRT*-----
jgi|Neofi1|2173|7000001156971211                                  NGTHYDRALWIIGAIAAGVNICVSWIRPVPRT*-----
jgi|Aspzo1|58567|e_gw1.2.2008.1                                   NGTNYARGMWIIGVISLGVNLSMSWVRPMPRSEMP*--
jgi|Aspnid1|5705|AN1008 NrtA                                      SHHDYARGIWILGVISMAVFISVSWVRPVPKSQMRE*-
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405                              SHHDYARGIWILGVISMAANIAVAWIRPVPKSQMRE*-
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170                             SHHDYARGIWILGVISIAANIAVAWIRPVPKSQMQD*-
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105                             NASHYARSLWIIGVICIAGNMLLSWIRPVPRGQTTRS*
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27      NGGHYPRSLWIIGVIAIAGNLVVSWINPVPRSQRVRS*
jgi|Aspcl1|7255|7000001156880179                                  NGTHYARSLWIIGVISIAANLAVAWIRPVPKSQMQRQ*
jgi|Aspfu1|1150|Afu1g12850 mRNA                                   NETHYSRSLWIIGVISIAANLAVSWIRPVPKSQMMRQ*
jgi|Neofi1|2646|7000001156973616                                  NETHYSQSLWIIGVISIAANLAVSWIRPVPKSQMMRQ*
jgi|Aspac1|38369|Genemark1.545_g                                  NGSDYSRSLWIIGAISIGANVLVSWIRPVSKKQVVQR*
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082                    NGSHYARSLWIIGVISLAANVVTSWIRPVAKNPVVSQ*
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71      NGSHYAQSLWIIGAISLAANVGISWIRPVAKNPVVKQ*
jgi|Aspni_DSM_1|161829|An08g05670m.01                             NGSHYARSLWIIGVISLAANVCISWIRPVAKNPVVRQ*
jgi|Asptu1|112586|e_gw1.1.743.1                                   NGSHYAQSLWIIGAISLAANVGISWIRPVAKNPVVRQ*
jgi|Aspfo1|130828|e_gw1.4.716.1                                   NGSHYAQSLWIIGAISLAANVGISWIRPVAKNPVVRQ*
jgi|Aspka1_1|18106|AKAW_06633                                     NGSHYAQSLWIIGAISLAANVGISWIRPVAKNPVVRQ*
jgi|Aspte1|476|ATET_00476                                         NGHDYARSLWIIGVLCIATNLLVAWIRPVPREQMVR*-
jgi|Aspor1|6220|AO090012000623 mRNA                               NGSHYARSLWIIGIIAIAANLAVSWIRPVPRRQMV*--
jgi|Aspfl1|27006|7000001155834032                                 NGSHYARSLWIIGIIAIAANLAVSWIRPVPRPQMV*--
                                                                  .  .* :.:**:* :  .  :  :*:.*: :
```

Pairwise Similarity % using EMBOSS Water (Smith-Waterman algorithm)

	NrtA	NrtB
jgi|Aspnid1|6363|AN0399 NrtB	75.0	100
jgi|Aspfu1|1610|Afu1g17470 mRNA	75.8	82.5
jgi|Neofi1|2173|7000001156971211	76.6	83.6
jgi|Aspzo1|58567|e_gw1.2.2008.1	83.0	80.1
jgi|Aspnid1|5705|AN1008 NrtA	100	75.0
jgi|Aspsy1|53362|fgenesh1_pm.1_#_405	92.5	77.6
jgi|Aspve1|49262|fgenesh1_pm.1_#_1170	91.4	77.0
jgi|Aspgl1|28588|fgenesh1_pg.21_#_105	83.9	74.8
jgi|Aspwe1|40392|fgenesh1_kg.4_#_684_#_Locus1608v1rpkm116.27	86.1	79.7
jgi|Aspcl1|7255|7000001156880179	85.0	79.8
jgi|Aspfu1|1150|Afu1g12850 mRNA	86.2	79.1
jgi|Neofi1|2646|7000001156973616	86.2	79.3
jgi|Aspac1|38369|Genemark1.545_g	83.2	76.8
jgi|Aspca3|159116|estExt_Genewise1Plus.C_11082	86.0	78.3
jgi|Aspbr1|41323|fgenesh1_kg.4_#_627_#_Locus1876v1rpkm111.71	85.0	75.3
jgi|Aspni_DSM_1|161829|An08g05670m.01	84.6	77.8
jgi|Asptu1|112586|e_gw1.1.743.1	84.4	78.0
jgi|Aspfo1|130828|e_gw1.4.716.1	84.6	78.2
jgi|Aspka1_1|18106|AKAW_06633	84.6	78.2
jgi|Aspte1|476|ATET_00476	83.9	78.6
jgi|Aspor1|6220|AO090012000623 mRNA	85.8	79.2
jgi|Aspfl1|27006|7000001155834032	85.8	79.6