

Figure S1. Alignments of M36, S41, and ASP domain protein sequences for Allomyces macrogynus (AMAG), Batrachochytrium dendrobatidis (BATEDERAFT), Homolaphyctis polyrhiza (Hp) and Spizellomyces punctatus (SPPG).

Following are the aligned domain sequences for the three families we targeted. There are two columns separated by tabs. The first column has gene names and the second column contains the sequences.

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# M36
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>AMAG_00149T0 -----FASDPTEGDMALVGDPEdTAV-ASPQGWG-TDG-----LTVGNVVARQSPKAAALA-----
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KKNPTSYDAITNLFYNNIHLDFYLYGDFEAKGNFQDNDFGKGGKGNDAVINVMETSSENALFLTPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
ATIVRMTPE--TRN--DDFGMGSYASGRA--GIRKAYSTSFKTNPSTYGLKPLPYLW--EVHAKGEVWASMLWEVYWNLDVQYGCPIEQ--ADLT-----  
TEPGRHLTGLSGNKLALQVVDGLKQPC-----YPTFVSARDAIILLADQGTGMENQCIWNAFAKRGLGSKA--  
>BATDERAFT\_34483 --SYRVIPLGGROPLASKATLVQNF--DKE--ASPLGWHKNDSDSGS-----TSITSGNNVIAHDNSN-----NSNPPSSGLTTANSF-----  
FDQFDDKQDPQSEYKDVASVNTVFFLTYAYHDLIFKYGFDEQSGNFQSNIGGQGRGNDVLAHQDQSGKLNANFMTPPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
GEGWSDLVALVLEMVESD--TAA--TPKPVGVYVNTDQGIQRFYPTDILTINTHTYSKLS--TR--EVHDAGEVWASMLWEVYWNLDVQYGCPIEQ--ADLT-----  
KGNVVLQLVMDGMLKQPC-----NPTFLSARDAIILLADQGTGMENQCIWNAFAKRGLGSKA--  
>BATDERAFT\_35259 -----GTQLVQNP--DLV--ASPLGWHNTDNGIGN-----IASTFGNNVIAQENRKNQ-----NPILGLRPSVNTFSFQ-----  
FSVNDIKQSPPEYADASVNTVFFLTYAYHDLIFKYGFDEQSGNFQSNIGGQGRGNDVLAHQDQSGKLNANFMTPPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
GWSVVALSLEVLPTD--TRN--DRRVGAYVNTNPKRGIKRLFPYSTNMMNPHYADVLR--NS--NRHYTGEIWASMLWEVYWNLDVQYGCPIEQ--ADLT-----  
KGNVVLQLVMDGMLKQPC-----NPTFLSARDAIILLADQGTGMENQCIWNAFAKRGLGSKA--  
>BATDERAFT\_27765 --TYKAIQVFPNPDGSDIKDPE--YK--SSPNGW---TNG-----TATQGNVNAVDF-----TKSPAPGTGIDGVDF-----TKFNPE--  
DPNDPDMNQAAAVNLFYIGNLMDHDSYQYGFTEAAGNFQDNDFGKGGKGNDAVINVMETSSENALFLTPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
-----TRVILGAYVINKPE--GIRSHPYTDMKVNPLTYADVKT--RT--ELHEAGEVWASMLWEVYWNLDVQYGCPIEQ--ADLT-----  
AGNIVAMQNVGMLMHQPC-----SPSLVNRDAIISADAAHYNGANKCEIKWGFAGKRGLGSKA--  
>BATDERAFT\_28410 --TYKAIKVPDLSPNDG--FSDIKDPE--YK--SSPNGW---TDG-----TVTQGNVNDALD-----TKKPPVPATGVDGVDF-----TKFNPA--  
NVTDPDMNQAAAVNLFYIGNLMDHDSYQYGFTEAAGNFQDNDFGKGGKGNDAVINVMETSSENALFLTPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
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FGNIVTMQNIIGGMMKQPC-----HPTFLDARDAFASDVAHYNGANKCEIKWGFAGKRGLGSKA--  
>BATDERAFT\_85535 --SYNIVQVNPSPDQG--FSIAKDPE--FAG--SSPNGW---TDG-----SRTSGNNANVDE-----NNGQ--GVGQGGIFN-----TNFDAQS--  
DPRTPENSQSTVNLFYCNLMDHDSYQYGFTEAAGNFQDNDFGKGGKGNDAVINVMETSSENALFLTPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
ALAIITAKQGD--KDV--DPVAVGTVYVNSQ--GIRSHPYTDMKVNPLTYADVKT--RN--EVHDAGEVWASMLWEVYWNLDVQYGCPIEQ--ADLT-----  
AGNIIATQVIIGGMMKQPC-----NPTFLSARDAIILLADQGTGMENQCIWNAFAKRGLGSKA--  
>BATDERAFT\_5304 --SYNIVGLPRANPTDG--FVVVNNPE--YK--SSPNGW---TAG-----SITKGNADVAR-----RSNVLTPGVGRNGVDF-----TNFDPTG--  
QPTSATNIQASAVNLFYQANMMDHDSYQYGFTEAAGNFQSNFSGKGRGNDVLAHQDQSGKLNANFMTPPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
AIVLTKSNTD--TST--SNIISGAYASNRRA--GIRMYPTNMMNPHYADVLR--QS--EVHDAGEVWASMLWEVYWNLDVQYGCPIEQ--ADLT-----  
AGNIVLQLVMDGMLKQPC-----NPTFLSARDAIILLADQGTGMENQCIWNAFAKRGLGSKA--  
>BATDERAFT\_5302 ASYKVIPIKVDVNDG--FEMVKNPE--FNA--SSPNGW---TDG-----QETTGNVLAADQ-----TSGTP--SSGVNGVDF-----SSFNPQE--  
DPRTAANVKAASAVNLFYIGNVMDHDSYQYGFTEAAGNFQDNDFGKGGKGNDAVINVMETSSENALFLTPDQGPGRMAMFRYTTSTEPNRRGLDSDQVIVHVEYHGHSSRLTGGPAAAGCLLEGEARGMSEGSDF  
AMYLTKSNTD--VAT--TPIVMAAYATGDAS--GIRSHPYTDMKVNPLTYADVKT--RD--EVHDAGEVWASMLWEVYWNLDVQYGCPIEQ--ADLT-----  
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>BATDEDRRAFT\_1614 -TYKAIQVPGFNPNDGGFSDIKDPE-YKP-SSPNW---TNG-----TATQGNVNAVDF-----TKSPPAGTGIDGVDF-----TKFNPEA-  
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AGNIVAMQNVGMLMHQPC-----SPSLVNARDAIASDAAYNGANKCEIWKGF AKRGLGVNA-  
>BATDEDRRAFT\_1616 -TYKAIQVPGFNPNDGGFSDIKDPE-YKP-SSPNW---TNG-----TATQGNVNAVDF-----TKSPPAGTGIDGVDF-----TKFNPEA-  
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AGNIVAMQNVGMLMHQPC-----SPSLVNARDAIASDAAYNGANKCEIWKGF AKRGLGVNA-  
>BATDEDRRAFT\_5299 -TYKAIPIPLGSPDDG-FSNKDPPE-YKP-SSPNW---ING-----TLTRGNAAEAVNT-----ANTPSTPGTGINGVDF-----SKFNPAT-  
DINDADNIQATAVNLFYLANLMDHITYQYGFTEAAGNFQDNDFKGGKGDVAVLTPSDGQPGKMKMFRFRVKNRSGGLDNQVPLHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF  
AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYGDLKT--RT-ELHEAGEVWAAMLWEVYVWNLVTKSGFSTNL YD-AGKG-----  
AGNIVAMQNVGMLMHQPC-----NTNFIDARDAIVAADVAHYDANKCEIWKGF AKRGLGVNA-  
>BATDEDRRAFT\_5305 ATYKVIPLGSPDDG-FSSVKNPE-YKP-SSPNW---IDK-----ASTEGNANTINS-----FKIPRGPETSVGGVDF-----TKFNSTA-  
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AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYADLQT--RK-LAHDMGEVWAAMLWDIYVWNLVTKSGFSTNL YN-AGKG-----  
FGNVTMNMIGGMMMLQPC-----NPTFIDARDAIASDAVHYKANKCEIWKGF AKRGLGVKA-  
>BATDEDRRAFT\_5317 -TYKAIPIPLGSPDDG-FSNKDPPE-YKP-SSPNW---TNG-----TLTRGNAAEAVNT-----ANTPSTPGTGINGVDF-----SKFNPAT-  
DINDADNIQATAVNLFYLANLMDHITYQYGFTEAAGNFQDNDFKGGKGDVAVLTPSDGQPGKMKMFRFRVKNRSGGLDNQVPLHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF  
AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYGDLKT--RG-EVHAGEVWAALAWEIYVWNLIAKNGFSTNL YD-AGKS-----  
AGNIVAMQNVGMLMHQPC-----NTNFIDARDAIVAADVAHYDANKCEIWKGF AKRGLGVNA-  
>BATDEDRRAFT\_1501 -TYEAIPLNLSPGMNRFANITNPE-YSA-SSPNW---TNG-----NFTQGNVNAVDF-----SQSPPAGTGINGMFA-----TKFNPNV-  
EPDNDNIQAAAVNLFYLANLMDHITYQYGFTEAAGNFQDNDFKGGKGDVAVLTPSDGQPGKMKMFRFRVKNRSGGLDNQVPLHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF  
AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYADLKT--RK-EVHAGEVWAALAWEIYVWNLIAKNGFSTNL YD-AGKS-----  
SGNIVTMNMIGGMMMLQPC-----NPSLVDARDAIASDVSHYKANKCEIWKGF AKRGLGVKA-  
>BATDEDRRAFT\_1480 -TYKAIPLRPLSPNDG-FSNVKNPE-YKA-SSPNW---TDG-----TVTEGNVNAEY-----GGELPVTGTVGKGVDF-----TKFNPTA-  
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AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYADLKT--RQ-EVHAGEVWAALAWEIYVWNLIAKNGFSTNL YD-AGKS-----  
SGNIVTMNMIGGMMMLQPC-----NPSLVDARDAIASDVSHYKANKCEIWKGF AKRGLGVKA-  
>BATDEDRRAFT\_1483 -TYKAIKVPGLTPDDG-FTSIRNPE-YSA-SSPNW---TDG-----TTTEGNVVALDL-----RSRTPIPGTGVDGVDF-----SKFNPKT-  
EFTPEPNMQAIAVNLFYVNLMDHITYQYGFTEAAGNFQDNDFKGGKGDVAVLTPSDGQPGKMKMFRFRVKNRSGGLDNQVPLHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF  
AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYADLKT--RQ-EVHAGEVWAALAWEIYVWNLIAKNGFSTNL YD-AGKS-----  
SGNIVTMNMIGGMMMLQPC-----YPTLIDARDAIASDVSHYKANKCEIWKGF AKRGLGVKA-  
>BATDEDRRAFT\_1489 -TYKAIKVPGLTPDDG-FSDIKDPE-YKP-SSPNW---TDG-----TVTQGNVVALDY-----TKKPPVPANGVDGVDF-----TKFNPTA-  
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AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYADLKT--RQ-KSHDMGVWASMLWEVYVWNLVTKNGFSTNL YD-AGKG-----  
FGNIVTMNMIGGMMMLQPC-----DPTFLSARDAIASDVARYNGANKCEIWKGF AKRGLGVKA-  
>BATDEDRRAFT\_1469 -TYKAIKLPDLNPDG-FSDIKDPE-YKP-SSPNW---TNG-----TVTEGNNAKTVDY-----TKKPPVPANGVDGVDF-----TKFNSTA-  
DVTDPNDNIQAAAVNLFYVANLMDHITYQYGFTEAAGNFQDNDFKGGKGDVAVLTPSDGQPGKMKMFRFRVKNRSGGLDNQVPLHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF  
AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYADLKT--LK-SPHAIQVWASMLWEIYVWNLVTKNGFSTNL YD-AGKG-----  
AGNIVTMNMIGGMMMLQPC-----HPTFLDARDAIASDVARYNGANKCEIWKGF AKRGLGVKA-  
>BATDEDRRAFT\_1593 -TYKAIKVPDLSPDDG-FSDIKDPE-YKP-SSPNW---TDG-----TTTQGNVVALDL-----RKDPPVPANGVDGVDF-----TKFNSTA-  
DVTDPNDNIQAAAVNLFYVANLMDHITYQYGFTEAAGNFQDNDFKGGKGDVAVLTPSDGQPGKMKMFRFRVKNRSGGLDNQVPLHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF  
AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYADLKT--LQ-KSHDMGVWASMLWEIYVWNLVTKNGFSTNL YD-AGKG-----  
AGNIVTMNMIGGMMMLQPC-----HPTFLDARDAIASDVARYNGANKCEIWKGF AKRGLGVKA-  
>BATDEDRRAFT\_14272 -----  
LHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYGDLKT--RT-ELHEAGEVWAAMLWEVYVWNLVTKSGFSTNL YD-  
AGKG-----AGNIVAMQNVGMLMHQPCPKYPSGWSHLVNARDAIASDAAYNGANKCEIWKGF AKRGLGVNA-  
>BATDEDRRAFT\_11777 -SYRVIPLGGRDPKTSSTALIRNPV-DST-ASPFQWHDLNNNGDGS-----VSIITRGNVVAHDNSN-----RRDNPNTGLVTAQNDF-----  
FDFKFDNDQEPQYKQDASITNVFVLSNSYHDLFKYGFDEQAGNFQINAGGSGRNDGIAHQQDGERFNANFATPPDQGRPMRMRFLFNKSRPRRDSGLDNGIVLHELHGLSTRLTGGPSNSNLQFTEAGGM  
GEGWSDIVALVLEMLPTD--TPD-TTKVGGYSTNDPRAGVRFNPGYSTSTSNVPSYARIRR--NT-EVHAIGEIWASMLWEVYVWNLVEKLGFSSTNKKDDAKSG-  
KGNLFLQLIVDGMKLPQC-----NPTLIQARDAIQADKVAAGNSGFCITRGLFAGRMGIRA-  
>BATDEDRRAFT\_1639 -TYKAIKVPGLSPKDDGGFSDIKDPE-YKP-SSPNW---TDG-----TTTEGNNAVDL-----RPRTPVPGAGVDGVDF-----TSFDPKT-  
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>BATDEDRRAFT\_5372 -----  
LHEYGHVSTRLTGGS LAPL CMSGHETRMSEGSWDF AMIVTAKESD--KAD-TPVILGAYVINKP-GIRSHPYTDMKINPLTYGDLKT--RT-ELHEAGEVWAAMLWEVYVWNLVTKSGFSTNL YD-  
AGKG-----AGNIVAMQNVGMLMHQPC-----SPSLVNARDAIASDAAYNGANKCEIWKGF AKRGLGVNA-  
>SPPG\_01665T0 -SYTVADFRGADPTQO-IITVKDPA-NAV-ASPKGWH--NDGTTA-----FTETRGNAFAYNS5-----GGSVTKAGGAQNNY-----TKYDVNA-  
NANTASNKQAAIANVYVANSMDLIFYQYGFTEAAGNFQVSNNGKGRNDVAVISAQDPQNNANFATPPDQGRPMRMRFLFNKSRPRRDSGLDNGIVLHELHGLSTRLTGGPSNSNLQFTEAGGM  
ALFVQRATH--TRD-TDLVMGDWVTGNPR-GIRTPQYTSLQRNLTLYSTVGR--LN-EVHAIGEIWASMLWEVYVWNLVTKSGFSTNL YD-AGKG-----  
KGNIVAFQLFVDSLALQPC-----NPTMIAARDAIQADENRYDGYKCAIWKGF AKRGMGANA-  
>SPPG\_02641T0 ATYHVPLGINDPESEGRVLRDPA-HPL-ASPMGWH--NQNGGQ--HTVTIGNNVYAHENLEGTSSWV-----DNHRP--DGTVSLTFD-----FPIDF-  
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ALVTRTTPNS--TRH-DNFMGGEYANGG-Y-GIRKYYKSDKINPSTYGFITRPGYV-GVHAKGEVWAEIYEVWNLVTKNGFDPDWFN-TGYKVSPEYTHYRFRDFTGQLQPRRDKQNTKG--  
GNILALQLVVDGMKLPQC-----YPTFVDARDAIQADELNDNGENLCTLEAF AKRGLGVDAK-  
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GWSDSVALTEMTAAD--TPN-TDKAVGQYVSNQGRVQFPYSTLQRNPLTADAVK--NP-EVHAIGEIVWASMLFEVYVWNLVTKNGFDPDWFN-TGYKVSPEYTHYRFRDFTGQLQPRRDKQNTKG--  
KGNVTLQAVVDGMKLPQC-----NPTFVQARDAIKLADVVRNKGANQCEIWKGF AKRGLGIN--  
>Hp\_gm\_asm134-0.164 ASYTVPLGNDPADGPRVKNLPA-HHD-ASPYGWN--SKGKKGHSYNTVTVGNVVAQENLDGGSQWR-----ANYRP--TASDLDTFD-----FAVDL-  
KKQPSYLDASI-----  
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GIRKHIYSTLKTNPSTYGFTKKPDYV-EVHAKGEVWAALIEVYVWNLIDKHGFEFDYFN-VNYG-----KD--NNLVGLKGNLAFQLVMDGLKLPQC-----  
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AGNIVTMNMIGGMMMLQPC-----NPTFTTARDAIILADALYGGQKCLIKWAFARRGLGVA-  
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KKQPSYLDASI-----  
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GIRKHIYSTLKTNPSTYGFTKKPDYV-EVHAKGEVWAALIEVYVWNLIDKHGFEFDYFN-VNYG-----KD--NNLVGLKGNLAFQLVMDGLKLPQC-----  
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# S41

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>BATDERAFT\_37569 NMGVIKLDDEFPDTPIDAESIDPAIRIIRSL SKELKDT--KSVVFEIRSNPGGYITFAD--MLPQLF---KPD-----FEPFGARYLMNNVT-----HNIF---  
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>BATDERAFT\_35365 NLGIIKLEDFSPNTLKTGALADVEAVREIHKLLSTVLKDT--NAVVFDIRANGGSGEFAN-AIQPLF---KPD-----FQPMPLYMNSVA-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSIDHRTSYNQSNLYGQAYLKP---  
VGAFTNAMCYSAACEVFSALQSFETGYVFGEDGTTGGGGADMFLDSELLVFNHV-----  
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VGAFTNAMCYSAACEVFSALQSFETGYVFGEDGTTGGGGADMFLDSELLVFNHV-----  
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VGIFTDVAVCYACDLFSASIQSSETGHVFGEDGTTGGGGADMFLDPELLF-----  
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VKSPIDL--RSSRNWSKTS---PDDSKYSLFHDFDTPENIITCSKVYTKP---MGVFTSGDCVSAACEIVAGTVQSYDITGVFGEIITTAGAGAVNWLDPDLIFYDPTDFKMPFKKELTSH-  
NKEAFYNQMTV-----  
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NKEAFYNQ-----  
>BATDERAFT\_23310 NLGIIKLSFMPTNLKTGAPADTEAVREIHKLLSTVLKDT--NAVIFDLRANGGSGDLAN-AIQPLF---KPD-----FQPMPLYMNSVA-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSVNCNRTSYNQSNLYGQAYLKP---  
VGIFTDVAVCYACDLFSASIQSSETGHVFGEDGTTGGGGADMFLDPELLF-----  
>BATDERAFT\_23534 NMGIIKLSFECTSRTTNTROIPEAIREVRKLLTTLVKKT--NSILDVREGGGGSMFAN-AIQPLF---KSK-----LEPFQVYKLMNDVT-----YNYF---  
VHPPIDL--KSSRDANFKTP---AK-SKYSLHFDFDPRASNIYDQVYTKP---  
VGVFTSGNCSACEIMTGMQSFKIGTVFGEDVTTAGSGANVWLDPELIDC-----  
>BATDERAFT\_23544 NMGIIKLSFKCTSRTTNTROIPEIREVRKLLTTLVKKT--NSILDVREGGGGSMFAN-AIQPLF---KSK-----LEPFQVYKLMNDVT-----YNYM---  
VHPPIDL--KSSRDANFKTP---AK-SQYSVHFDFDPRASNIYDQVYTKP---VGVFTSGDCMSACEIMTGMQSFKIGTVFGEDVTTAGSGANVWLDPELITHDPTDFKMPFKKELTSD-  
TKEIFYNK-----  
>BATDERAFT\_23754 NLGIIRLDDFMPNTLKTGAPADMEAVREIHKLLSTVLKDT--NAVIFDLRANGGSGEFAN-AIQPLF---KPD-----FQPTPMRYLMSSIA-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSIDHRTSYNQSNLYGQAYLKP---  
VGIFTDVAICYACDLFSASIQSSETGHVFGEDGTTGGGGADMFLDPELLFNPID-----  
>BATDERAFT\_28775 NLGIIRLDDFVPKNLKTADAPADTEAVREIHKLLSTVLKDT--NAVIFDLRANGGSGDFAN-SIQPLF---KPD-----FQPMILRYLMNSVT-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSVDHVDTPFDPRANMYGQAYLKP---VGIFTDVAICYACDLFSASIQSSETGHVFGEDGTTGGGGDFTSLDSYLLFNHDFQPMYAKELTDN-  
TTGQSYTN-----  
>BATDERAFT\_24156 NLGIIRLEDFAPNTLKTGAPANMEAVCEIHRLLSTVLKDT--DAVVFDIRANGGSGEFAN-AIQPLF---KPD-----FQPMPLYMNSVA-----YNTL---  
VNGTFFV--DTSNPWYKTP---PG-SKYSVNFDKTSFNQSNLYGQAYLKP---  
VGIFTDVAVCYACDLFSASIQSSETGYVFGEDGTTGGGGADTFSLDQLLFPVDF-----  
>BATDERAFT\_24207 NLGVIKLSHFLPFHFFGRGVEEAIFEIHNLLSTVLKDT--NAIVFDRVNTGGMSEFAN-GILQFF---KPD-----FQPMQSRFLMKNLT-----YSTL---  
VNGTRSF--DTAIDANWKT---PG-SKYSIPYNISSFDKANLYGQAYLKP---VAALDTATCRSECDLFAVLSQSSSETGYVFGEDGTTGGAGADVFLDPLLMFFDPTDFKMPYFDYLSGTG-  
N-----  
>BATDERAFT\_24985 NMGIIKLESFSTRLATNVPVPEGVLEVRKLLTTLVKKT--KSLVDVREGGGGAMGFSS-GIPQLF---KAD-----FQPFKATYLMNNVT-----YNYM---  
VNPPIDL--ETSRDANWKT---PG-SKYSVLHDLIDPKSANDYQVYTKP---  
MGVFTTGDGCFSAEVMTSVQSGVGTGFGEDSTTGGGGANVWLDPELINF-----  
>BATDERAFT\_25222 NLAVVRLDTPMPSVNHSTLTPVADTLVLRLLTHQLKYT--RALVLDIRSNGGLYDFAS-QIPQFF---KPD-----HHPLQMQLYNNAT-----YSLF---  
VNHTSVA--SPFYNAWLSKP---PG-SNYTMDIDVPMQSVNLIQMYLRP---MGVFNNGGCSACEMFTASIQDHNIGTVFGEDGTTSGSGLSFDTP-  
DLVSHNPVDFTPAPYTNLSPDQTKA-----  
>BATDERAFT\_25462 NMGIIRLASFCTSRRTNTQNTLEALEVERLLKTVLKDT--NSILDVREGAGGCPIFAN-VILQFF---KSD-----IEPLVKVYLINKVT-----SNMF---  
SNSHEGL--ETSCDANWKT---AG-SKYSVLHYVDPKELGTNPIYDKP---MGVFTNNGCVSAACEVMTESVQSFIGTVFGEDVTTAGAGANVWLDPELIFYDPTDFKMPFKKELTSD-  
TKEIFY-----  
>BATDERAFT\_25463 NMGIIRLASFCTSRRTNTQNTLEALEVTRLLKTVLKNT--NSILDVREGGGGCPIFAN-AIQPLF---KSK-----LEPFQVYKLINKVT-----SNMF---  
ANSPKGL--ETSCDANWKT---AG-SKYSVLHYVDPKELGTNPIYDKP---MGVFTNNGCVSAACEVMTESVQSFIGTVFGEDVTTAGAGANVWLDPELIFYDPTDFKMPFKKELTSD-  
TKEIFY-----  
>BATDERAFT\_25559a NMGIIRLASFCTSRRTNMQNTLEALEVTRLLKTVLKNT--NSILDVREGGGGCPIFAN-AIQPLF---KSK-----LEPFQVYKLINKVT-----SNMF---  
ANSPEEL--KSSRNWSKTP---AG-SKYSVLHYIMDPKELGTNPIYDKP---  
MGVFTSGNCSACEVMTESVQSGIGTVFGEDVTTAGAGANGWLDPELIFYDPTDFKMPFKKELTSD-----  
>BATDERAFT\_25559 NMGIIRLASFCTSRRTNMQNTLEALEVTRLLKTVLKNT--NSILDVREGGGGCPIFAN-AIQPLF---KSK-----LEPFQVYKLINKVT-----SNMF---  
ANSPEEL--KSSRNWSKTP---AG-SKYSVLHYIMDPKELGTNPIYDKP---  
MGVFTSGNCSACEVMTESVQSGIGTVFGEDVTTAGAGANGWLDPELIFYDPTDFKMP-----  
>BATDERAFT\_27246 NLGIIRLDDFMPNTLKTGAPADMEAVREIHKLLSTVLKNT--NAVIFDLRANGGSGEFAN-AIQPLF---KPD-----FQPTPMRYLMSSIA-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSIDHRTSYNQSNLYGQAYLKP---  
VGIFTDVAICYACDLFSASIQSSETGYVFGEDGTTGGGGADMFLDPELLFNPID-----  
>BATDERAFT\_26287 NMGIIKLSFGCTSRTTNTLVSFEGIRVVRKLLKTVLKNT--NSILDVREGGGGSDVFAN-AIQPFF---KSN-----IKPFVKVYLISDVT-----YNYF---  
VNMPIDL--KSSRNANWKT---PK-SKYSILHDFDTPKMIISTYDQVYDKP---MGVFTSGNCASACEIMTGTQVSHDITGVFGEDVTTAGAGANIWLDPELITHDPTDFKMPFKKELTSS-  
TKEIFYNKMTVGNRAFRVNRDKKHEKWIETDGIYSDIVI-----  
>BATDERAFT\_85649 NLGIIRLDDFIPKDLKTGARVDEIAREIHKLLSTVLKDT--NAVIFDLRANPGGSGDFAN-AIQPLF---KPD-----FQPMPLYMNSVA-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSIDHRTSYNQSNLYGQAYLKP---VGIFTDVAVCYACDLFSASIQSSETGYVFGEDGTTGGGADVFLNPTLIFYDPTDFKMPYAKELTDK-  
TTGQSYTN-----  
>BATDERAFT\_86001 NLGIIRLDDFMPNTLKTGAPANMEAVREIHRLLSTVLKNT--NSVLDLRANGGNGNAN-AIQPLF---KPD-----FQPTMRYLMSSVA-----YNTL---  
VNGTQSF--DTSNPWYKTP---PG-SKYSIDVDTDFDRANMYGQAYLKP---  
VGIFTDVAVCYACDLFSASIQSSETGHVFGEDGTTGGGGADMFLDPELLF-----  
>BATDERAFT\_86231 NMGVIKLDNFSPLKASTGTDASSVATSFVRLLTHELKDT--SSIVFELRNGPSSILFAN-SLPQLF---KPD-----FDSFGARYLKNVNT-----YNYF---  
VKGSAR--DTWQVWNESE---AD-ARYTNIIPFNSEFAANSYGVYTKP---  
MGVFTDGNCFSAACDLFSANIQHEAGTVFGEDGLTGAGGANILDVDPALVIYSPDTRFQFPFSELNTPATGSYANMLSVGRQSRVNRNGKYNGQLIEDTGKSDIWDV  
>BATDERAFT\_86314 NLGIIRLDDFVPKNLKTGAQADMEGVREIHKLLSTVLKDT--NAVILDLRKNLGGNGNAN-AIQPLF---KPD-----FQPMILRYLMSSVA-----YNTL---  
VNGTSFF--DTSNPWYKTP---PG-SKYSIDHRTSYNQSNMYGQAYLKP---  
VGAFTDAICYACDLFSASIQSSETGHVFGEDGTTGGGGDIFSLDSTLLALNPVDF-----  
>BATDERAFT\_87928 NMGIIKLSFECTSRTTNTQKVSSEGVLEVERLLKTVLKDT--NSILDVREGGGGSLDFAH-EILQLF---KSD-----IEPFVKVYLRNKVT-----FNIF---  
VESPIDL--RSSRNANWKT---PDDSEYSLFHDFDTPEDSGTYNQIYDKP---  
MGVFTSGNCSACEAMTGTQSYNIGTVFGEDATAGSGAIWLDPELIFYDPT-----  
>BATDERAFT\_89445 NMGIIELTSFGCTSRTTNTQKIPKLEVERLLKTVLKNT--NSILDVREGGGGSMDFAN-GILQLF---KSD-----IEPFVKVYLRNKVT-----FNMF---  
VESPIDL--RSSRNANWKT---AG-SKYSILHDFDTPKMIISTYDQVYDKP---MGVFTSGNCASACEIMAGTVQSYNIGTVFGEDATAGSGAVVWLDPELIFYDPTDFKMPFKKELTSH-  
TNE-----  
>BATDERAFT\_90146 NLGIIRLDDFIPKDLKTGARANAEEAVREIHKLLSTVLKDT--NAVVFDLRANGGSGDFAN-AIQPLF---KPD-----FQPTMRYLMNSVA-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSIDHRTSYNQSNLYGQAYLKP---  
VGAFTDAICYACDLFSASIQSSETGYVFGEDGTTGGGGADVFLNPTLIFYDPTDFKMPYQYQELTDE-----  
>BATDERAFT\_92476 NMGIIKLSFECTSRTTNTROIPEAIREVRLLKTVLKDT--NSVLDVREGGGGSMRFAN-DIPQLF---KSK-----LEPFVKVYLRNKVT-----YNYM---  
VHPPIDS--RSSRNANWKT---PK-SKYSVLHDLTDLKTSITDQVYTKP---MGVFTSGDCASACEIMTGTQVQSKLIGTVFGEDVTTAGAGAVVWLDPELIFYDPTDFKMPFKKELTSH-  
TKDFTYNKMTVGHRLVRSGDHKKPVDEVDGIASDI-----  
>BATDERAFT\_92744 NLGIIRLEDFMPKPKLKTADAPADVEAVREIHKLLSTVLKNT--NAVIFDIRANGGSGEFAN-AIQPLF---KPD-----FQPTQVRYLMNSVT-----YNTL---  
VNGTYFF--DTSNPWYKTP---PG-SKYSIDHRTSYNQSNLYGQAYLKP---  
VGAFTNAMCYSAACEVFSALQSFETGYVFGEDGTTGGGGADMFLDSELLVFNHV-----  
>BATDERAFT\_92841 NMGIIKLSFECTSRTTNTLMSVLEAIREVRGLLKTVLKDT--NSILDVREGGGGSMRFAN-AIQPLF---KSN-----IEPFVKVYLRNKVT-----YNYM---  
VKSPIDL--RSSRNANWKT---PDDSKYSLFHDFDTPENIITCSKVYTKP---MGVFTSGNCASACEIVAGTVQSYDITGVFGEIITAGAGAVNWLDPDLIFYDPTDFKMPFKKELTSH-

NKEAFYQ-----  
>BATDERAFT\_93324 NMGIKLTSFMPTSRRTNTRDVLKAIEREVRLKTVLKDT-NSVLIDVREGGGGCANFAN-GIPQF---KSK-----LEPFVKVYLRNDVT-----YMF--  
VHPPIDS--KASHDAWLKIS---PK-NKYVSLHDLTPENTMTYNQYTKP---MGVFSGDCCASACEIMTGTQVQSKFJGTVFGEVDTAGSGANIWLDPKLNHDPDFKMPMPFRETLSH-  
TKDTFYNKMTVGHRLVRSGDHKGPVEDVGIASDI--  
>SPPG\_00409T0-----IMEVYDGIQQLKA-----QGA-KRLLDWTDNGGGWGLGYFAVATLFPNVKRD-----VATFRMTPLLKMLM-----TAAEFKDLNETTPL--  
TMFGPSNFVDP-----ATGLSLTSADLNRLILKTHKET---FGKYTSEYSDVSVVDGGIADPKRPHNNAWATGIPPPVTPVFPVENVVVLTNGLCGSTCAHSARLHIDEVGVKVFV-  
>SPPG\_05166T0 NLGFIRLASFTEVDVEPKV-----AVNAIRDLLVNELKDT-AGLVIDRVNNGGGYVTAD-TIPOFF---VAD-----YEPTTARALISDN-----VEKGAEG--  
QDWKATYLAN---PG-DKYTGTVFSFKETANKIGQLYLPK---  
VAVFNNAKCYACDMFSAGMQDHEAALIIGEDATTGAGGANVIEHRSY-----  
>SPPG\_06219T0 GLHISTFDG-----SVDDILKWGDDWLNLLAKNNSLKNLIDFCGNGGGKLSGS-ALTFLL---  
NPSEYAPPSGGLPLPTTLKIGEATNSSSYFYKNFFSDLNKNMNTLADMWMTDRPPGTFVPR-  
SRKMYREVLLPRNNEEIRSVAPKEYFNLAIVTDGYCISTCAIVTNQLRAQNTPI-----  
>Hp\_gm\_asm106-0.164 NLGVIRLVDFLPKTPDGNVQVDL-TISLIRDILTSDLKDT-NAVVDVRNPGGAIDIAN-LLPQLF---KPD-----FVPGTARYLRNSIN-----YNLF--  
VQKSPPT--DSWHQANTSSK---DG-DVFSGEVGFDTVPQANQYQAYLRP---MGVFTNGRCYSACDFSAAIQDSNTGLILGEDNFTGAGGANVLQH-TDLQAADPADFNPIVLKELTDS-  
YQSGWSVLTVAIRQAIRSGTHKGLIEDHGITSDDVVV  
>Hp\_gm\_asm236-0.161 NLGIRLENFELNENVNA-----AILLIRSILVGLAET-KAMIVDVRNNGGLITLAD-YLPQLF---GTH-----FTNMGARDLINSVN-----TNIF--  
NSTYYMP--DDFSMAYFSTP---PG-DTYTAVPVFDTDQDSFMGGQAYFKP---VGIFTNGCYACDIFANMQDNELATVFGEDTATGAGGANVVDLNTLFLPLDPTDFLLPYTSSVSL-  
IAQNLVAVRQLVRTGINAGD-----  
>Hp\_gm\_asm80-0.52 NLGIRLASFEPINSVGGYELDAAMTAIRSLVGLPKDT-NSVVIDLRNNGGDLTAN-DIPQLF---KPD-----YNYPGARYLRNSVS-----YDLL--  
VKNSPPT--DSWHVADQTK---TG-DEWSAIALFDPVSDANKIGQVYKPK---AGLTDGGCYACDLSANMQTSGTAIVFGEDETTGAGGANVWTHSTDLVP-  
DATDFHELPTAQLKPNYNDMRT-----  
  
#####  
# Asp  
#####  
>AMAG\_11032T0 QYFAEIQIGTPGQSFVVM--DTGSSNLVWPSTRCSMACWLHRRFDA-----KKSSTFRKNGTHF---GIQYSGS--LEGILSTDTVTIG-  
DLEILDQT---FGESTKEPIAFVAGKF-DGILGLGDYD-IA---VE--KVVP-----PFY-SM-IN--QGLLRHPVFTFWLGDVKN-----DPNAGGEIVFGDIDPAHH-----  
TKGIHYAVVR-----KGYWEVKIEALT-V--GGEDFPL-----LGNATAA-----  
IDTGTSLIAGPKAADAINKLIGAKKNFLGQ-----YIMDC--RKLDS--MPEIAFRFG-----GKDFTLQPEDY-----  
VLKVAASPIGGGGQEQ---CISGFMGIEMPPQLGQ-----WIVGDVFLRKYFTVYDLG--KNRVGFAE-  
>AMAG\_11644T0 QYFAEIQIGTPGQSFVVM--DTGSSNLVWPSTRCSMACWLHRRFDA-----KKSSTFRKNGTHF---AIQYSGS--LEGILSTDTVTVG-  
DLEILDQT---FGESTKEPIAFVAGKF-DGILGLGDYD-TAVEKVV--PPFY-----QM-IN--QGLLRHQLFTFWLGDVKN-----DPNVGGEIVFGDIDPAHH-----  
VGKIHYAVVR-----KGYWEVKMEALT-V--GGEDFPG-----LGNATAA-----  
IDTGTSLIAGPKAADAINKLIGAKKNFLGQ-----YIMDC--KRLDS--MPEIAFQFG-----GKDFALQPEDY-----  
VLKVAASPIGGGGQEQ---CISGFMGIEMPPQLGQ-----WIVGDVFLRKYFTVYDLG--KNRVGFAE-  
>BATDERAFT\_16209 QYFGEIQIGTPPQPTVIF--DTGSSNLVWPSTRCSMACWLHRRFYDA-----SESSTYVNNGTGF---AIQYGTGA--  
LEGVISQDVTIIG-GLTIENQG---FGESVKEPEITFAVGRF-DGILGLGFDT-IS---VQ--KVVP-----PMY-NL-IN--NHQLDTPFLFGVWLGSSSG-----  
EEGGEIVFVAVNDHDF-----KGAVTVPVVR-----KAYWEVELEGVTI--GGKLAIE-----KSSRA---AIDTSSSLFALP-VAEADAINGLGG--  
KKNWNGQ-----FIVDC--ATIDS--LPELTLQFGG-----QKQFVITGSYD-----ILQVSAGPVGGGQD-----  
CISGFMGLDIPAPAGPL-----WIVGDVFLRKYFTIYDVG--NARVGFAE  
>BATDERAFT\_20107 QYFGVVQLGTPPQSFVLF--DTGSANLVWPSTRCTDAPCMNHARYDF-----TRSTFTPNNSPF---AIQYGLGS--  
VTGVISSDQLQA-GINIPNQ---FAEAVTEPNTFLTSSF-DGVLGLGFTA-IS--INN--IPT---MD-NM-IA--RGLIPAGIFGFLTRGGV-----  
SGSSLLTGGIDITHV-----NGAITWIPVVR-----KAYWEVMDSVTL--GKTLTAT-----GSHA---VFDSTGSLIAIP-TVHANQIHOQLGAIPFTNG--  
LQ-----LIPC--SGLPP--ITFALN-G-----VAFTLRNEDY-----VLPP--G--FGY-----  
CVSVFVGLDMNMF-----WILGDSFLKFYITFDV--NGRIGIAN-  
>BATDERAFT\_28537 -----SGEPV---TIKY-KGE-  
EYSGFSSDAAVTIP-GTRITIGIKLPVLSVKQSPDLVGINPKF-DGVFGFYSS-LS--KHH--PQIT-----AMD-VL-YS--NDVIPNEVSLQLCPYDM-----  
LQSFINIGNTDITPK-----CG-TDGSVAVWVDSPT-----NDQFTVNIKSILV--NGEKVEL-----PAEFQKQV-EHGHTLYS---RVETCFLHMRFKVVVVALVNAIVSGAITIK--  
NK-----VLKRKHK--LSPEDIDNIFWKHMLMIRSDFKIKW--EKLPS--LSITMFAEN-PVTDDNRNSVVTIKLGPDKY-----IQRV---D--YTH-----  
DLFSVTAGSNDK-----ATLGIPIFTRLEVTFDLQ--NTRIGFG--  
>BATDERAFT\_87177 -----TEDVL---SDSYFDGS-  
FWKGVSFATVSIIP-KTISITDAPVIGIYQSTRSLVLDQNNHGLGIAYPS-LT--HSKITSAT-----IID-SF-YT--SGSIKKEVAFELCSYEL-----  
SKQSYIDIGNTGVYSK-----CG-TDGSVAVWVETPI-----LNLFTVNIKSILV--NHQKVQL-----PSTFYQNP-SGGITLFS--  
FIDTCAAKILLPRILVMEINEMIKSRAFQPR-----PNLQELKLFYFQDYTMKLEFIDW--KKLPT--ISFLMSTGT-AALQKNPSSIVNITLGPDKY-----LQKA---G--  
PKE-----YFVAVGSDQN-----AALGISFMTRLRILVDRK--NGLVGF--  
>BATDERAFT\_89345 -----SGKTV---TINY-KGD-  
EYNGISSTAATVTP-GTRITIGIDLPLVLEKQSAVLGIDNSLKGQILGFGYSS-LS--DYY--TSVT-----AMD-VL-YK--NDVIPNEIQLCPYEM-----  
LQSFINIGNTDITSK-----CG-TDGSNIAWVESPS-----DGYFSVNIKIOILI--DDKPVNL-----PAGFQKQV-EDGHTLYS---AVETCYMHPFVIVVAALIDAIVCSNAITLD--  
SF-----N--FKHR--LNNQIKSLFKWRHLTAESYFNKIKW--DRLPT--ITITMFTET-PVTDDNRNSVVEIKLGPDKY-----LQRY---N--SEN-----  
LVFAVEVGNPKY-----ATLGISFMTRLRGLVDRK--HARIGFG--  
>BATDERAFT\_26411 -----SGEPV---TIGY-KGD-  
EYNGFSSSTAADVTIP-GTITDINLPVLSVERQSADIVGINPNL-DGIFGFGYTS-LS--NHH--SQTT-----AMD-VL-YT--SDVIPNEIQLCPYEM-----  
TSNSFINIGNTDITPK-----CG-TDGT-----I--NDEQVEL-----PEEFQKQV-EDGHTLYS---SVETCFLHMRFPEVVVVALINAILDSGAITVN--  
IN-----I--FSDK--LKGVMVKKIFSONYAMLESDFIDW--GKLP--LSITMFAEN-PVTDDNRNSVVTIKLGPDKY-----IQRA---G--  
SKNKYLTGVCIRFVAVGSDNNDN-----ATLGIPIFMAQLGLTFDLQ--NKRIGFG--  
>BATDERAFT\_87892 -----SSEKPV---NINY-NDD-  
EYNGVSTATVTP-GTGIAGVNLPLVIAIQKQASLVGIGGKLGQVGFYSS-LS--KHY--SQTT-----AMD-IL-YN--DGVIPNEIQLCPYGA-----  
ALKSSINIGNTDITK-----CG-TDGSVAVWVQSPK-----NNQFSVNIKSILV--NDKSVEL-----PEEFQKQV-EDGHTLYS---SVETCYMHPFVIVVVALINAILDSDAITVK--  
TM-----FKNDHFSKRKIKKLLKQNHLMKSKYSVDW--DKMPT--LSIVMFSQA-PVTDDNRNSVVTITLGPDKY-----MQII---D--SED-----  
FMFTVTACPNDY-----ANLGTSMTRLRILTFDLQ--NQRIGFG--  
>BATDERAFT\_26134 -----LNEEGI---MIEY-KGE-  
EYNFSSSTAADVTIP-GTKIIDMDLPVIAIQKQSPDLIGIGGRIDQGLGFGYSS-LS--KRH--PQST-----AMD-VL-YN--SGIIPKNEIQLCPYGM-----  
LSEFINIGNTDITPK-----CG-TDGSVAVWVQSPS-----ADHHTVNIKSILV--NGKPVLD-----PERFQKQV-ENGRHTLYS---YLQTCFLYMRFPKVVVVALINAILDSDAITVK--  
TM-----FRNDHLGKRKIKRKLKRNHLMSESKYNIDW--GMPT--ISIVMYSPT-PVTDDNRNSVVTITLGPDKY-----MWRY---D--SKH-----  
VRFVAVGSDNY-----ATLGTSMVRLGLTFDR--HKRIGFG--  
>BATDERAFT\_23765 -----GRLV---TIEY-KGK-  
EYRGVSFATVTP-GTITDIGLPPVAVEKQSPDVGISPNF-DGVFGIYPS-LS--KRR--PQTT-----VLD-VL-YN--DGVISNNEIQLCPYGM-----  
RSKSFINIGNTDITAK-----CG-TNGRSVAVWVDSPT-----HGRHSVNIKSILV--NDELVEL-----PEEFQKQV-ENGRHTLYS---YLHTCFLYMRFPKVVVVALISAVDSDAITVK--  
NN-----MLERKR--LNPEDIDNIFWKHMLMRSNFIHIDW--IKLPS--LITMFAQT-PVTDDNRNSVVTITLGPDKY-----IQRV---D--SKH-----  
VRFVTAGSNDN-----AALGISFMTRLRILTFDRV--HKRIGFG--  
>BATDERAFT\_25259 -----SGKTV---TINY-KGE-  
EYSGFSSSTAATVTP-GTITGINLPAILVEKQSPDLIGIGGKLGQVGFYSS-LS--NHH--SQTT-----AMD-AL-YS--NNVIPNEVSIQLCPYEM-----  
LQSFINIGNTDITPK-----CR-TDGSVAVWVQSPS-----TDEFTVNIKSILV--NDKQVLD-----PAGFQKQV-EYGRHTLYS---VIHTCFYIQLPEIVVVALIDAIVDSDAITVK--  
NT-----M--FSNNHLGKRKIKRKLKRNLMFEPNYIDW--NKMP--LSITMFAQT-PVTDDNRNSVVTIKLGPDKY-----MQRI---D--SKY-----  
VRFVAVKISSDY-----ATLGIQFMRILGLTFDLQ--NTRIGFG--  
>BATDERAFT\_27966 -----SGEPV---TIKY-RGK-  
EYNGVSTAAVTP-GTITDINLPILAVEKLSPYLVGIGGTLKQVGFYSS-LS--DRH--SQTT-----AMD-AL-YT--NDVIPNEIQLCPYDM-----  
LQSFINIGNTDITAK-----CG-TDGSVAVWVQSPS-----NDQFSVNIKSMLV--NGKVVLD-----PEEFQKQV-ENGRALYS---YLRTCTYMYLPKVVVVALIDAIVDSNAITFK--  
SI-----L--FKNK--LGGKIKRILQRNSPIPKFDNIDW--GKLP--ITIVMFSQA-PVTDANCNSVVTIKLGPDKY-----IQRV---D--SKN-----  
YLFTVVAAGPNNDN-----VVLGTSMTRLRILTFDRV--HKRIGFG--  
>BATDERAFT\_87185 -----SGQPV---TINY-KGK-  
EYRGFSSSTAADVTIP-GTITDINLPVLSVEKQSAVLGISPDL-DGVFGFYSS-LS--KHH--PPIT-----AMD-VL-YS--NGVIPNEIQLCPYDM-----  
TSDSFINIGNTDITAK-----CG-TDGSIAWVKSPTS-----ADYFTVNIKSILV--NGKRVNL-----PEEFQKQV-EHGHTLYS---IVETCFRYMFPKVVVVALIDAIVDSGAITIK--  
RI-----K--LKRK--LYPEEIDDVFKWGLMAESSFIDW--GKLP--VSTIFAEEN-PVTENRNSVVAIKLGPDKY-----IQRY---D--SKN-----  
FEFVAVKAGSNDK-----AVLGISFMTRLTMFDRA--HKRIGFG--  
>BATDERAFT\_92020 -----SGEPV---TIKY-RGK-  
KYNVSSSTAATVTP-GTRITDINLPVIAVEKQSAIVGISPFG-DGVFGFYSS-LS--KHH--SRVP-----AID-AL-YN--DGAIPNEIQLCPYGM-----

TSEFINIGNTDVTAK-----CG-TDGTSAVWVQSPS-----NDEFTVNIKSILV--NGKKVDL-----PDEFQKKV-KHGHTLYS---VIHTCCTFMHFPRVVVKALVDAIVDSGAITVR--  
KT-----KSEHKRK-LNPEIDGIFLKHLYLWPTSNYNIKW--EKLPS--FSITMFSN-PVTDNRNSVVEIKLGRDYP-----MQRV---D---SEK-----  
VFVAIRVGSNDR-----AVLAISFMTRLLTDFRV--HKRIGFG--  
>BATDRAFT\_12559 QYGRIALGTPPQSFLVQF--DTGSANLWLPSTRCSOPACVKHSQFNR-----LLSSTWTSLTQTF---SIQYGTGS--  
LSGVMSSDTFFYMA-GLTVTNQS--FAESVSPQPTTFINTKY-DGVLGLGMRE-IS--IN-NVAT-----PME-NM-HA--QGLIPAGVFLYLTKNSA-----  
PGSVLTIGGYDPSHV-----DGSITWPLSK-----RQFWQVGLTSVTF--NGTLLIQ-----NAQA-----VFDGSGTSLIAIP--  
TVSATLHQQLGAIPYQNG-----LQILPC--TGLPS-----VTFMLN-----NVSFTLRNEDY-----VIPF---G---FGY-----  
CVSAFVGLDMHGF-----WILGDSFMKLYITFDS--NNRIGIAN-----SYVDRS--  
>BATDRAFT\_87859 -----CG-TDGTSLIWIWESPT-----RKFITVTLRITV--DNQLVKL-----PKGFQRAK-LFTLNQWS---LFDVCSHTQVPTVFEALKAIKTSKAILSH--  
YWFQYAFNGRISIP-GTTIWAQAPITGITIQRPLFMSPNI-NGILGISYPE-NA--RYH-GIHGS-----VID-AF-FN--ENTIDKNEVAIQMCSYSL-----  
THDSYIDIGNKDIKPK-----CG-TDGTSLIWIWESPT-----RKFITVTLRITV--DNQLVKL-----PKGFQRAK-LFTLNQWS---LFDVCSHTQVPTVFEALKAIKTSKAILSH--  
IS-----DLGW--  
EGF-----FCGKLNMP-----NTIKFD--  
>BATDRAFT\_28725 -----CG-TNGKSIANWQSPS-----NSYFSVNIKNILV--NDEPVNL-----PAEFQKKRKNRGLTLYS---VVETFLYMRFPKVVVETLVDAILDSNAITIN--  
LHESFINIGNTDITPK-----CG-TNGKSIANWQSPS-----NSYFSVNIKNILV--NDEPVNL-----PAEFQKKRKNRGLTLYS---VVETFLYMRFPKVVVETLVDAILDSNAITIN--  
NN-----M--LERK-LNDEKIEDIFWKHYLMSEKYFTRW--DKLPT--LSITMFAEN-PVTDNRNSVVTIIRLGRDYP-----MQRV---G---FEK-----  
FAFAVKAGSNDH-----AVLGVSMTRLLKTFDRK--HKRTGFG--  
>BATDRAFT\_25666 -----AVLGVSMTRLLKTFDRK--HKRTGFG--  
QYRIGSSDAAVTIP-GTRITGIDLPIAVEKQSPDLVGINPKF-DGVFGIGYTS-LS--DHH--PQIT-----AMD-AL--HN--DGVIPRNEVGLQLCPYDM-----SGEPV---TIYY-KGK--  
TSEFINIGNTDVTAK-----CG-TDGRSAVWVQSPS-----NDEFTVNIKNILV--NGKQVQL-----PVEFQKKV-EHGRTLYS---VMETCFYMQFPKVVVETLVAIVDSNGITVK--  
NSKSKHKKRKHKKR-LTPEIEKIFWEHRLMSKFDIDW--DKLPP--FSIVMFAEN-PVTDNRNSVVTIIRLGRDYP-----LQRV---N--SKE-----  
FVFAKAGPNDN-----AALGTFMTRLLTDFRA--HKRTGFG--  
>BATDRAFT\_28684 -----AALGTFMTRLLTDFRA--HKRTGFG--  
EYKIGSSDADVTIP-GTITGIDLPIAVEKQSPDLVGINPEF-DGVFGFAYSS-LS--KHH--PPIT-----VLD-SL-YK--DGVIPNEIQLCPYDM-----SGEPV---TIEY-KGE--  
LHESFINIGNTDITAK-----CG-TDGTSLIWIWESPT-----DRHTVNIKNILV--NDEPVNL-----PERFQKV-ENGRGLTLYS---YIHTCFYMRFPPEAVSTLVNAILDSGAIIVK--  
NN-----MLERRH-LTPEIDIDIFWKHLMIRSNRIDW--DKLPS--LTIWVSET-PVTDNRNSVVAIKLGPKEY-----IQII---D---SKH-----  
VMFSVVEGSPDN-----AILGTFMTRLLTDFRA--HTRIGFG--  
>BATDRAFT\_26132 -----AILGTFMTRLLTDFRA--HTRIGFG--  
DYNAFSSDAAVTIP-GTITGIDLPIAVEKQSPDLVGINPKF-DGVFGFHPSS-LS--EHH--SPIT-----AMD-VL--YN--GGVISNNEVSLQLCSHDI-----SGEPI---TINY-RGN--  
FQSFVNIENGTDITPK-----CG-TDGRSAVWVQSPS-----NDCHNVNIKSILV--NGEQANL-----PAEFQKKV-EDDHTLYS---YIQTCSYMIFFPVTVTALVGAIVDSGAIIVK--  
NN-----L--FTSK-LSKREIKKIFWRSYAMPESTYNIW--NKLPS--LSITMHAET-PVTLNENSVVTIIRLGPKEY-----IQRV---N--SER-----  
FLFAVAVGSNDR-----AALGTFMTRLLTDFRA--HKRIGFG--  
>BATDRAFT\_27290 -----AALGTFMTRLLTDFRA--HKRIGFG--  
EYKIGSSDAAVTIP-GTRITDINLPIAVEKQSPDVGINPEF-DGVFGFAYSS-LS--KHH--PPIT-----VLD-SL-YK--DGVIPNEIQLCPYDM-----SGEPV---TIDY-KGD--  
LHESFINIGNTDITAK-----CG-TDGTSLIWIWESPT-----DRHTVNIKNILV--NDEPVNL-----PERFQKV-ENGRGLTLYS---YIHTCFYMRFPPEAVSTLVNAILDSGAIIVK--  
IN-----I--FSDK-LGKVMVKKIFSQNYAMLES-----DDQFTVNIKSILV--NDEPVNL-----PEEFQKTIMENGRILYS---SVETCFYMRFPPEAVSTLVNAILDSGAIIVK--  
VFAIKAGPNDN-----AILGTFMTRLLTDFRA--HKRIGFG--  
>BATDRAFT\_27296 -----AILGTFMTRLLTDFRA--HKRIGFG--  
EYRIGSSDAAVTIP-GTRITGIDLPIAVEKQSPDLVGINPKF-DGVFGFAYSS-LS--NHH--SRVT-----AID-AL--YN--GGVIPKNEVSIQLCPYDM-----SSGKPV---TIKY-KGN--  
LSKSSINIGSDTVPK-----CG-TDGRSAVWVQSPS-----DDQFTVNIKNILV--NGKQVQL-----PEEFQKNGKNGRILYS---YIHTCFYMRFPPEAVSTLVNAILDSGAIIVK--  
KT-----KSEHKH-LSETEIEKVFENRLLKSKLNINW--GRLPS--LITMFAEN-PVTDNRNSVVTIIRLGRDYP-----LQRV---N--SKE-----  
SRFTVAGSNDK-----AVLGFPMNRLTDFRT--HKRIGFG--  
>BATDRAFT\_87250 -----AVLGFPMNRLTDFRT--HKRIGFG--  
EYNGTSTADVTIP-GTRITDINLPIAVEKQSPDLVGINPEF-DGVFGFYPL-LS--KHH--SRIT-----AMD-IL--YS--NNVIPNEIQLCPYDM-----SGEPV---TIKY-KGD--  
TSDSFINIGNTDITAK-----CG-TDGRSAVWVQSPS-----DDQFTVNIKNILV--NGKQVQL-----PEEFQKV-ENGRGLTLYS---YIHTCFYMRFPPEAVSTLVNAILDSGAIIVK--  
SM-----FSK-LSKREIENIFWENHPMIESTYNIW--EKLST--ITITVFSQT-PVTDNRNSVVTIIRLGRDYP-----IQRV---D---SED-----  
CKFAIKAGSNDK-----AILGTFMTRLLTDFRA--HKRIGFG--  
>BATDRAFT\_22611 -----AILGTFMTRLLTDFRA--HKRIGFG--  
EYKIGSSDAAVTIP-GTITDINLPIAVEKQSPDLVGINPEF-DGVFGFNSL-LS--KHH--PQIT-----AMD-VL--YT--SDVIPNEIQLCPYDM-----SGEPV---TIDY-KGD--  
LSDSFINIGNTDVTAK-----CG-TDGTSAVWVQSPS-----NDEFTVNIKSILV--NDEPVNL-----PEEFQKTIMENGRILYS---SVETCFYMRFPPEAVSTLVNAILDSGAIIVK--  
IN-----I--FSDK-LGKVMVKKIFSQNYAMLESFSDW--GKLP--LSITMFAEN-PVTDANLNSVVTIIRLGPKEY-----IQRV---D---SEN-----  
CYLTIAGPNDN-----AILGTFMTRLLTDFRT--HKRIGFG--  
>BATDRAFT\_28256 -----AILGTFMTRLLTDFRT--HKRIGFG--  
EYKIGSSDAAVTIP-GTIIIGMDLPIAVEKQSPDLVGINPKF-DGVFGFAYSS-LS--DQH--PQST-----AMD-VL--YN--SGIIPKNEIQLCPYDM-----TLNEEGI---MIEY-KGE--  
LSEFINIGNTDITPK-----CG-TDGRSAVWVQSPS-----ADHHTVNIKSILV--NGKQVQL-----PAGFQKV-ENGRGLTLYS---YIHTCFYMRFPKVVVETLINTLSDAITVK--  
TM-----FRNDHLGKRRIKRLKRNHLMSEKYNINW--DMPT--ISIVMSET-PVTDNRNSVVTIIRLGRDYP-----MWRY---D---SKH-----  
VRFVAVGSNDY-----ATLGTSMTRLLTDFLQ--NTRIGFG--  
>BATDRAFT\_24293 -----ATLGTSMTRLLTDFLQ--NTRIGFG--  
QYNGTSTADVTIP-GTITGVNLPVAVEKQSPDLVGINPKF-DGIFGLAYSS-LS--NQH--SRVT-----AMD-AL--YN--DGAIPKNEVSIQLCPYDM-----SGEPV---SIKY-KGK--  
TSEFINIGNTDVTAK-----CE-TDGTSAVWVQSPS-----NNQFSVNIKSILV--NGRPAEL-----PAEFQKV-KDGRGLTLYS---SVETCFYMRFPPEAVSTLVNAILDSNAITVK--  
DN-----M--LRSYDLKDKKIMRLWKNHLMRYKYIDW--SRMPR--FSITMFAQT-PVTDNRNSVVTIIRLGRDYP-----MQIISIEN--SEK-----  
FLFAVTVGSNDY-----AVLGVSMTRLLKTFDLQ--NARIGFG--  
>BATDRAFT\_21660 -----AVLGVSMTRLLKTFDLQ--NARIGFG--  
AWEHGFLATYQI-KTSIIVKNAPVIGFQSDPSIDIGNEQIQLGLAYPS-LA--EY-ATPPT-----VMD-AL--YD--SKAISNNEVGLHLCPYEL-----GPSLTYMHETSJ---FGYDGVY--  
SKKSYIDIGNLAPK-----CG-TNGNPIWISYPT-----QDYFTVDIKSILV--NGNVPVL-----PNEFQKVTGDKMHPFS---  
IDTCTTMDLPEHVAILDEIVGSDAFEPK-----LDHHTLFFWERYIINKSHYTIW--KKLPV--LSFVMSGV--SNSSDSIVKTLGPKDY-----IQKI---S---  
STK-----YLFVSVAGSNKN-----AVLGTSMTRLLKTFDLQ--HVRIGLQ--  
>BATDRAFT\_4465 -----AVLGTSMTRLLKTFDLQ--HVRIGLQ--  
AVNYTLGNDALTI6-TVSPQNVFAIPTSVTMPPSPVGT-----DGIIGLAPPS-FN--NQG--TDQ-----FMQ-WL-----SYSAVAVQVSVHDMVK--  
EQDNRSDNGTITYGIEPGRS-----SGTPHWLPIQL--TNIPGSSNYVWNMDSITF--GGGAIPM-----PLDASMA-----GKAFTLTSSQYQY-----TD---  
LVDGTALQLVQQFLDVVNQMGIDNGAGQ-----YTLDC--TKAKA--FPNLVLTG-----GKAFTLTSSQYQY-----TD---  
GKI-----CVSILGRAQDQER-----TILGVAFRLQYVTFDYD--RWAVGI--  
>BATDRAFT\_23205 -----TILGVAFRLQYVTFDYD--RWAVGI--  
EYKIGSSDADVTIP-GTITDINLPIAVEKQSPDLVGINPEF-DGVFGFAYSS-LS--NHH--PPAT-----AMD-AL--YN--HDVIPNEIQLCPYDM-----SGEPV---TIDY-KGE--  
TNSFINIGNTDITAK-----CG-TDGTSAVWVQSPS-----DDQFTVNIKSILV--NDEQVQL-----PEEFQKTIMENGRILYS---SVETCFYMRFPPEAVSTLVNAILDSGAIIVK--  
IN-----I--FSDK-LGKVMVKKIFSQNYAMLESFSDW--GKLP--LSITMFAQT-PVTDANCSVVTIIRLGPKEY-----IQRV---G---SKN-----  
FAFAIKAGPNDN-----AILGTFMTRLLTDFRA--HTRIGFG--  
>BATDRAFT\_22593 -----AILGTFMTRLLTDFRA--HTRIGFG--  
EYKIGSSDAAVTIP-GTITGVNLPVAVEKQSPDLVGINPKF-DGVFGIHFSS-LS--KHH--SPIT-----AMD-SL--YS--NNVIPNEIQLCPYDM-----SGEPV---NIKY-KDK--  
FEQSFINIGNTDITAK-----CG-TDGRSAVWVQSPS-----NDHHTVNIKSILV--NDEQVQL-----PEEFQKV-EDDHTLYS---HVETCSYMHFPQTVVIALVKAIVDSNAITW--  
DA-----KSRRLNPEEIDIFWKHRLMSESNFIDW--RKLPT--FTIVMYAQT-PVTDNRNSVVTIIRLGPKEY-----IQKV---NLGKFKR-----  
YLFVAVGSNDN-----AILGTFMTRLLTDFLQ--NTRIGFG--  
>BATDRAFT\_25680 -----AILGTFMTRLLTDFLQ--NTRIGFG--  
EYNGTSTADVTIP-GTITDINLPIAVEKQSPDLVGINPKF-DGVFGFAYPL-LS--NQH--PQVT-----AMD-AL--YN--GGAIPNEVSIQLCPYDM-----SGEPV---TIKY-KGE--  
LHESFINIGNTDITPK-----CG-TDGRSAVWVQSPS-----NNQFSINIK-----ILPEKLVATLINTLSDNAITVK--  
NI-----LLRRKDKKVKKLLQANSMPFKYNYNIKW--EKLPT--VSIVMFAQT-PVTDNRNSVVTIIRLGPKEY-----MVKY---D---SEK-----  
FRFSIKAGSNDK-----AALDIPMSQLAVTFDRT--HKRIGFG--  
>BATDRAFT\_23274 -----AALDIPMSQLAVTFDRT--HKRIGFG--  
EYRIGSSDAAVTIP-GTRITGIDLPIAVEKQSPDLVGINPKF-DGVFGFAYSS-LS--NHH--SRVT-----AID-AL--YN--GGVIPKNEVSIQLCPYDM-----SSGKPV---TIKY-KGN--  
LSKSSINIGSDTVPK-----CG-TNGKSIANWQSPS-----DDQFTVNIKSILV--NGKQVQL-----PEEFQKNGKNGRILYS---YIHTCFYMRFPPEAVSTLVNAILDSGAIIVK--  
KT-----KSEHKR-LSETEIEKVFENRLLKSKLNINW--GRLPS--LITMFAEN-PVTDNRNSVVTIIRLGPKEY-----LHKY---D---SKH-----  
ARFTVKSNDK-----AVLGFPMTRLLTDFRT--HKRIGFG--  
>BATDRAFT\_89380 -----AVLGFPMTRLLTDFRT--HKRIGFG--  
SAKGHGFLTYSIP-ETTISIKSAPVVGISEQENPVIIIDGNPNQGVFSFAYPS-IA--MYH-AKPTT-----IMD-AI--YE--SGAVPNEVAMELCPYGL-----YPEHADAV---TLKYDGA--  
SEKSYIDIGNTEIDPK-----CD-TDGPVIVWQSPS-----RDRFTVNIKEIRI--DNKARRL-----PSEFQKVEDIWHPPYS---  
FISTCSKYISLPRKIYDKLIRAIKSGAFKPK-----LTKDDIKFFKKQIKVPHDIIDW--KKLPK--LSFVMTYET--SKTGKASRSSVEITLGRDYP-----IQVY---G---

AEE-----YQFFVDVGRNKR-----VVLGTFPMLRMRVVDRT--NQRIGFG--  
>BATDEDRRAFT\_21133  
DYVGVIPYVAVTIP-GTRITDTSPLIPLAVKLSADSVGGTGLKQGFYGFYTS-LS--NHH--SKTT-----AMD-IL-YN--NDVIPNNEVSLQLCPYDM-----SNGQPI----TIKY-KYS-  
TSESFINGINTDVAAK-----CG-TNGKSIWVWSPS-----DDRHTVNIKSILV--NDKQVLD-----PEEFQKRM-ENGRILYS----TVETCFLYMFPFETIVKALVDAIADSDAITVK--  
YN-----YVRIDFLNRQDFNDIFWRHHLMPAEMFIKW--NKLPT--LTIIMFAET-PVTDNDRSDIVTIKLGPRDY-----IQKV--D--FKN-----  
LVFAVKADSNH-----AVLGASFMSRLGLTFDRQ--NARIGFG--  
>BATDEDRRAFT\_25355  
EYRGSSTAVVTIP-GTRITGINLPVLVEKQSPDLVGINPKF-DGVFGFYGS-LS--SHY--TSVT-----AMD-AL-YS--YGVIPNNEISQLCPYDM-----SGEPV----AINY-KGE-  
LQDSFINIGNTDVTAK-----CG-TDGKSVAVWNSPI-----ADQFTVNIKSILV--NGKVNVL-----PAEFQQVV-ENG-----LVTMLIDAILDSGAIITVK--  
NT-----M--LSDNYLDRKRIRKRLKENRMLSESTYINW--DKMPT--ISITMHAET-PVTVNDSNVVITIELGPRDY-----MQRI--D--SKY-----  
VVFVAVKVPNYK-----ATLGISFMTRLGLVFDK--HARIGFG--  
>BATDEDRRAFT\_27069  
EYKGISSKAVVTIP-GTRITDTSPLIPLAVKQSPDLVGINPKF-DGVFGFYGS-LS--KHH--PPAT-----AMD-IL-YN--GNTIPNNEVGLQLCPYDM-----SGDPV----TIKY-KGD-  
ISNSFINIGNTDITAK-----CG-TNGRSVAVWVSDPS-----DGYFSVNIKSILV--NGEQVDL-----PAEFQKRLKNGYALYS---RVETCFMFMQFPERVATLIDVIVGSNAIIFK--  
KK-----K--LSDK-LNKEMVKKRLKRNRFIFKSNYINW--SKLPT--VSIVMFSQ--PVTDNDRNSVVIKLGPKDY-----IQII--D--SKH-----  
VRFTVKVGSDDH-----AILGIFMTRLGLTFDRA--HKRIGFAP--  
>BATDEDRRAFT\_27767  
EYKGVTSADVVTIP-GTRITGINLPVIAVEKQSPDLVGINPKF-DGIFGFAYSS-LS--KQH--SQIT-----AMD-SL-YN--DDVIPNNEVSLQLCPYDI-----SGEPV----AINY-KGK-  
LHESFINIGNTDITPK-----CG-TDGKSVAVWQSPS-----NSYFSVNIKNILV--NDEPVNL-----PAEFQKRRKNGRTLYS----VVETCFLYMRFPKVVVETLVDAILDSNAITIN--  
NN-----M--LERR--LNDKEIEDIFWKHYLMSEKYFRTG--DKLPT--LSIVMFAEN-PVTDNDRNSVVEIKLGPRDY-----MQRV--G--FEK-----  
FAFVAVKAGSNH-----AVLGVSFMTRLGLTFDRK--HKRTGFG--  
>BATDEDRRAFT\_27286  
EYNGVTSADVVTIP-GTRITDIDLPIVIAV-----GIDSML-NGVFGFNSL-LS--NHH--PQTT-----AMD-AL-YN--GGIIPNNEVSLQLCPYEM-----SGEPV----TIDY-KGE-  
TSNSFINIGNTDVTAK-----CG-TDGKSVAVWQSPS-----DDQFTVNIKSILV--NDEPVNL-----PEEFQKIMENGRILYS-----  
PEEFQKIMENGRILYS-----  
>BATDEDRRAFT\_26748  
EYNGFSSTAVVTIP-GTRIAGINLPVIAVEKQSPDVSIGSSKF-DGIFGLGYPS-LS--NHH--PPAT-----AMD-AL-YT--NDVIPNNEIGLQLCPYEM-----SGEPV----TIDY-KGD-  
TSNSFINIGNTDVTAK-----CG-TDGKSVAVWNSPS-----DNQFSVNIKSILV--NDEPVLD-----PEEFQKVV-ENGRILYS----SVETCFLYMRFPPEAVEALVDAILDSGAIITV--  
IN-----I--FSDK-LGKVMVKKIFSONYAMLESQDFIDW--GKLP--LTIIMFAEQ--PVTDANCNSVVIKLGPKDY-----IQRA--G--SKN-----  
CKFAIKAGSNH-----AVLGIPFMAQLGLTFDLQ--NKRIGFG--  
>BATDEDRRAFT\_90861  
SISCEEQLDVVHLA-GTLVSES-----ICSNMITNAVNTQDML-GGLVGMSPPL-----GK--DNTN-----LML-TL-----EQSFLSMVSWFYNQMAV--  
EGDHLISGAGEITFGGYNPARF-----SGDIEWLVPIV-----NTGYWSVKLDGMTF--GDMIVPV-----RKESSQT-----IFDGTTLIALPSDMF--  
TYMNTIYAEIDPVG--GM-----YKLDK--KHATT--LPP-----VTLFFGGPKY-----MMTWSEQLTDNVD-----  
CWSVFTPLNMG-----IIFGVSFLRNYHVTFDYTSMLMQVLA--  
>BATDEDRRAFT\_24767  
QYKGVTSADVVTIP-GTRITDIKLPVIAVEKQSPDLVGINPEF-DGIFGFNSL-LS--NHH--SRIT-----AMD-VL-YN--DGVIPNNEVSLQLCPYEM-----NGEPV----TIDY-RGK-  
TSNSFINIGNTDITPK-----CG-TNGRSVAVWVSDPS-----DGRHTVNIKSILV--NDKPVNL-----PEEFQKRV-KDGRILYS----VIQTCFIRYRFPVVKVKAIDAILDSGAIITVK--  
KA-----M--YSNK-LNSEEIKRIFWEHYAMLESKLNIDW--GKLP--LTIIMFAEQ--PVTDNDRNSVVIKLGPKDY-----IQRY--D--SER-----  
FLFIVAAGSNH-----AALGIPFMTLGLTFDRA--HKRIGFG--  
>BATDEDRRAFT\_28181  
QYNGVTSADVVTIP-GTSITDIKLPVIAVEKQSPDLVGINPEF-DGIFGFNSL-LS--DHH--PPIT-----AMD-VL-YK--DGIIPNNEIGLQLCPYDI-----SGEPV----SIKY-KGK-  
LHESFINIGNTDITPK-----CG-TDGKSVAVWVSDPT-----NNQFSVNIK-----ILPEKVTTLINAILDSNAITVK--  
GS-----M--LRRK-LGKEEIKKLLQANSMLFKSNYNIKW--  
DRM-----  
>BATDEDRRAFT\_24760  
EYSGFSSTAVVTIP-GTITGVNLPVIAVEKQSPDLVGINPKF-DGVFGFYGS-LS--KHH--PPAT-----AMD-TL-YN--DGVIPNNEVSLQLCPYDM-----NGEPV----TIKY-RGK-  
TSNSFINIGNTDITPK-----CG-TNGRSVAVWVSDPT-----DGRHTVNIKSILV--NDEPVNL-----PEEFQKVV-ENGRILYS----VIQTCFIRYRFPVVKVKAIDAILDSGAIITVK--  
KT-----V--FSNK-LNKKEVKKRIFWEHYAMLESQDFIDW--GKLP--LTIIMFAEQ--PVTDNDRNSVVIKLGPRDY-----IQKI--D--YTR-----  
LVFAVTTGSNDK-----AVLGIPFMTLGLTFDQ--NKRIGL--  
>BATDEDRRAFT\_12639  
QYGRIALGTPPQSFVQF--DTGSANLWLPSTRCDPACVKHSQFNR-----LLSSTWSTLQTF----SIQYGTGS--  
LSGVMSTGGTYMA-GLTVNQS--FAESVSGPTFTINTKY-DGVLGLGMRE-IS--IN--NVAT-----PME-NM-HA--QGLIPAGVFGLYLTKNSA--  
PGSVLITGGYDPSHV-----DGSITWLPLSK-----RQFVQVGLTSVTF--NGTLLIQ-----NAQA-----VFDSTGLIAIP--  
TVSATLHQQLGAIPYQNG-----WILGDSFMKLYYTFDSD--NNRIGIAN--LQLIPC--TGLPS-----VTFMLN-----NVSFTLRNEDY-----VIPF--G--FGY-----  
CVSAFVGLDMHG-F-----  
>BATDEDRRAFT\_89821  
DCKGVSSEAAVTIP-GTRITGVNLPVIAVEKQSPDLVGINPKF-DGVFGFYGS-LS--NHH--TSST-----AID-VL-YS--KNVIPNNEVGLQLCPYEM-----EKPV----SINY-KGN-  
SQESFINIGNTDITPK-----CG-TDGRSVAVWVSDPS-----DDHFAINIKOILV--NDKPVNL-----PAEFQKIMENGRILYS----VVETCSAYMFPKVVVAALVAILDSGAIITVK--  
NT-----M--FRSK-LDKDEIQGIFWGNLMPLEFNFINW--DMMPT--ISVAMFAEN-PVTDNDRNSVVIKLGPKDY-----MQIV--D--SKY-----  
VVFVAVKAGSNH-----ANLGIPTMTRLGLTFDRK--HKRIGL--  
>BATDEDRRAFT\_27037  
AVTCNVGQDILSIG-GLSIPNQ--LCLANSITS--NTPHL-DGIIGLAPPS-----VM--EPTS-----VFS-ML-DT--NKFAAASQVSWFYNSSSL--  
VDGHVQSGVVTVGGVDPISL--KGIIRWFAPML-----ANGRHSWPLTITLDRGSKVPT-----YAFDC--NAVPN--LSPILLTA-----GVDIKIMPEEQ-----  
QKDLSPILLIDSYSTYFLPRFMPDPLNAIHFQAKIDGT--GT-----YAFDC--NAVPN--LSPILLTA-----GVDIKIMPEEQ-----  
YKFK-----RQY-----CIIFFTSDRPNST-----PLLGVGFMFRYVTFDHK--KFKIGFST--  
>BATDEDRRAFT\_26151  
EYRGSSTAVVTIP-GTITGIGLPPVIAVEKQSPDLVGINPKF-DGVFGFYGS-LS--KRR--POIT-----VLD-SL-YN--GGIIPNNEIGLQLCPYGM-----GRHV----TIDY-KGK-  
TSNSFINIGNTDVTAK-----CG-TDGKSVAVWNSPT-----DRHTVNIKSILV--NDEPVNL-----PEEFQQVV-ENGRILYS----YIHTCFVYMRFPVVKVVAALVAILDSGAIITVK--  
NS-----MLKRLKSPEDIDNIFWKHYMPKSSFNIEW--NKLPS--LTIIMYSET-PVTDNDRNSVVIKLGPKDY-----LQRI--D--SKN-----  
YLFVSVVGPNDN-----AILGIPFMTLGLTFDQ--NARIGFG--  
>BATDEDRRAFT\_90978  
EYSGFSSTAVVTIP-DTGITGILPVLAVKQSPDLVGINPKF-DGVFGFYGS-LS--KHH--PPAS-----AMD-VL-YS--NDVIPNNEVSLQLCPYDM-----SGEPV----TIKY-KGE-  
LQDSFINIGNTDITPK-----CG-TDGKSVAVWVSDPT-----NDQFTVNIKSILV--NGEKVEL-----PAEFQKVV-ENGRILYS----RVETCFLYMRFPKVVVATLVAIVGSGAIITVK--  
NK-----VLKRKHL--LSPEDIDNIFWKHMLMIRSDFKIKW--EKLPS--LTIIMHAKN-PVTDNDRNSVVIKLGPKDY-----IQII--D--SKH-----  
DLFVSTAGSNH-----ATLGIPFMTLGLTFDQ--NTRIGFG--  
>BATDEDRRAFT\_25784  
EYRGISSDAVTIP-GTITGINLPVLSAEKQSPDLVGIHPKF-DGVFGFYGS-LS--KHH--PPAT-----AID-AL-YK--DGVIPNNEIGLQLCPYEM-----NGQP--TIKY-KNE-  
LQESFINIGNTDVAAK-----CG-TNGKSIWVWQSPS-----DGYFSVNIKSILV--NGKQVDL-----PEEFQQVV-ENGRILYS----YLHTCFYIRFPKTVVDVLINAILDNNAITTK--  
SI-----LFRNKLGMKIKSSLNKNNYLMFQSDYINIDL--DKLPT--LSIVMFAEQ--PVTDNDRNSVVIKLGPRDY-----MQRV--D--SKN-----  
VFTVEAGPNDN-----AVLGASFMTLGLTFDQ--NIRIGFG--  
>BATDEDRRAFT\_20117  
VTGVISSDTLQFA-GNIPNQ--FAEAVTEPNTLTSF-DGVLGLGFTA-IS--INN--IPTP-----MD-NM-IA--RGLIPAGIFGFLTRGGV-----TRSTFTPNNSPF-----AIQYGLGS--  
SGSSLTGGIDTHV-----NG-AITWIPVVR-----KAYEVVMDSVTL--GKTLTAT-----GSHA-----VFDSTGLIAIP--TVHANHQQLGAIPF-----  
TN-----GLQIPC--SGLPP-----ITFALN-----G-VAFTLRNEDY-----VLPF--G--FGY-----CVSVFVGLDMNN--  
F-----WILGDSFLKFYTFDQ--NVRIGIAN--  
>BATDEDRRAFT\_28541  
EYRGISSDAVTIP-GTITGINLPVIAVEKQSPDLVGINPKF-DGVFGFYGS-LS--KHH--PPTT-----VLD-TL-YS--NNVIPNNEIGLQLCPYGM-----NGEPV----IIDY-RGK-  
RSKSFINGNTDITAK-----CG-TDGRSVAVWNSPT-----NDHHTVNIKSILV--NDEPVLD-----PEEFQQVV-KDDHTLYS----VVETCSYMYFPKVVVATLVAIVGSGAIITVK--  
KN-----IFKDERK-LTPEEIDNIFWKHYLMVRSNFHIDW--IKLPT--FTIIMYQ--PVTDNDRNSVVIKLGPKDY-----IQRV--D--YTH-----  
NMFVAVKAGSNH-----AILGIPFMTLGLTFDQ--NIRIGFG--  
>BATDEDRRAFT\_28166  
KYSGISSTADVVTIP-GTITDINLPVIAV-----GIDPMF-NGVFGFYGL-LS--NHH--SRIT-----AMD-AL-YN--GGIIPNNEVSLQLCPYEM-----SGEPV----TIDY-KGK-  
LSDSFINGNTDITPK-----CG-TDGKSVAVWNSPS-----DDQFTVNIKSILV--NDKRVNL-----PAGFQKRV-KDGRILYS----VVETCCTMHFPKVVVATLVAIVGSGAIITVK--  
NN-----M--FRRK-FQORDINLFWKHMLMVEPKLNIDW--SKLPT--LSIVMFAEQ--PVTDNDRNSVVIKLGPRDY-----MQKI--D--SER-----  
YLFVAVVGSNYN-----AALCIPFMTLGLTFDRA--HKRVGF--  
>BATDEDRRAFT\_89831  
-----NGEPV----TIDY-KGD-

EYSGVSSDAVVITP-GTRITDIDLPLVAVKQSPDLVGDPEF-DGIFGFGNSL-LS--NHH--SRIT-----AMD-AL-YN--GGIIPNEVSLQLCPYEM-----  
TSNFINIGNTDVTAK-----CG-TDGRSVAVWVDSPP-----DGRHTVNIKSILV--NDKPVNL-----PEEFQKRV-KDGRTLYS---VIQTCFRIYRFPVVKALIDAILDSGAIATV-KA-----M--YSNK-LNSEEIKRIFWEHYAMLESKLNIDW--GKLP--L-SITMFAQN-PVTDANCSVVITKLGPKDY-----IQRV---D--SKH-----  
VLFAVKAGPNDN-----VILGIPFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_90267-----GQPV---TINY-KGD-  
EYNGISSTAVTIP-GTRITGIDLPLVAVKQSPDLVGINPKF-DGVFGFGHPS-LS--KHH--SPIT-----AIN-VL-YN--DGVISKNEVGLQLCPYEM-----  
LSDSFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----NSYTVNIKSILV--NGEKVDL-----PAEFQKRV-EHGRTLYS---SLETCTYMHFPETVVAALISAILDNGAITVK--SN-----L--FDDQ-LSKEEIEKIFLKHLMPTSNYNIKW--DRMPT--L-SITMHAET-PVTVENRNSVVITKLGPRSY-----MQRV---D--SKR-----  
FEFAIEVGSNDY-----AALGIPFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_28328-----SGEPV---TIKY-KGK-  
EYNGVSTAVTIP-GTSITDINLPLVAVKQSPDLVGINPKF-DGVFGFGHPS-LS--NHH--SQT-----AMD-TL-YS--NNVIPRNEISIQLCYEM-----  
LSDSFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----NSYTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---SVETCFLHMRFPKAVKALIDAINSDGAIATV-KA-----M--YSNK-LNSEEIEKIFLKHLMPTSNYNIKW--DRMPT--L-SITMHAET-PVTVENRNSVVITKLGPRSY-----MQRV---D--SKR-----  
FEFAIEVGSNDY-----AALGIPFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_90524-----SGEPV---SIKY-KGD-  
EYNGVSTAVTIP-GTSITDINLPLVAVKQSPDLVGINPKF-DGVFGFGHPS-LS--NHH--SRIT-----AMD-AL-YN--DGAIPKNEVSLQLCPYEM-----  
LHESFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----NSYTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---YQTCFLCIVLPEKVVTLLINAILDSNAITVK--GS-----MLRRKLKKEKVKKLLQANSLMFKSNYNIKW--DRMPT--L-SITMHAET-PVTVENRNSVVITKLGPRSY-----MQRV---D--SKR-----  
FRFTVAGSNDY-----AVLGSFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_28176-----SGKPV---TIRY-KSR-  
KYKGFSDTAVTIP-GTRITGIDLPLVAVKQSPDLVGINPKF-DGVFGFGHPS-LS--DHH--SRVT-----AID-AL-YN--GGVITNNEVGLQLCPYEM-----  
LSDSFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----NSYTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---YQTCFLCIVLPEKVVTLLINAILDSNAITVK--GS-----MLRRKLKKEKVKKLLQANSLMFKSNYNIKW--DRMPT--L-SITMHAET-PVTVENRNSVVITKLGPRSY-----MQRV---D--SKR-----  
FRFTVAGSNDY-----AVLGSFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_23192-----GQPV---TIKY-KGK-  
EYNGVSTAVTIP-GTSITDINLPLVAVKQSPDLVGINPKF-DGVFGFGHPS-LS--DYY--PPVT-----AMD-VL-YN--GGFISNNEVGLQLCPYEM-----  
LQESFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----NSYTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---YQTCFLCIVLPEKVVTLLINAILDSNAITVK--GS-----MLRRKLKKEKVKKLLQANSLMFKSNYNIKW--DRMPT--L-SITMHAET-PVTVENRNSVVITKLGPRSY-----MQRV---D--SKR-----  
FRFTVAGSNDY-----AVLGSFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_90888-----FMTINVT-----  
PVTL--NQIDTGSSTFWIVSTLNCAGNGCTPAVATANAF-----NPTK-----RSVINIPRVSFYDQSVN-SLEATQPIASSGEITFGTPNPARY-----  
TGNFTWLTIP-----NMQSVAWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---YQTCFLCIVLPEKVVTLLINAILDSNAITVK--GS-----MLRRKLKKEKVKKLLQANSLMFKSNYNIKW--DRMPT--L-SITMHAET-PVTVENRNSVVITKLGPRSY-----MQRV---D--SKR-----  
LFDGTTLIYLDQQLFPFINTAMGGISKQGGI-----YELDC--SLVHT--LQPIITFSLG-----GIGARLTLWN-----MQYFTLDN-----  
TR-----CISIFTSPPQS-----NIFGGIFLQHFYTSFDYN--ESRIGLAA-----  
>BATEDRAFT\_28984-----PTINTPRPPGSD--LIGTYGDQS-  
GWTGYGFGTARVT-GTNITASNAPVIGMFRQTNPIYTGDTVGLLGIAYPS-LA--SYR-VTPST-----VVD-AW-VA--SGTMPKNEIAFHACPYSM-----  
TNQSYVDFGNDPDSYK-----CS-SNGVPVWVAYSAP-----RTYFIDVRAISI--DSVPVTL-----PQTFQNGI-----GYNKWS-----  
LVDSCTSVMILPGSVITLVAIQQSGLPSD-----LASSPHLNFSLGSGIRPVQPFQW--SKLPS--ISFDITSQ--IRPGGQATFKITLGRQY-----IQPN---A---  
NGY-----FAMIARSGGERY-----ANLGIPLFNLNVLDRA--NARVGSQ--  
>BATEDRAFT\_28688-----SGEPV---TIDY-KGD-  
EYSGVSSNAVVITP-GTSITDINLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--PQT-----AMD-VL-YN--GGVIPNNEIGLQLCPYEM-----  
TSNFINIGNTDVTAK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---SVETCFLHMRFPVVDVLAIDLSGAIATV--IN-----I--FSDK-LGKVMKKIFSONYAMLESFSDIDW--GKLP--L-SITMFAQN-PVTDANRNSVVITKLGPKDY-----IQRV---D--SKH-----  
SKNKYLLTVCIRFAIKAGSNDK-----AVLGSFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_92488-----KRGEV---SGSYGSGA-  
TKWGYGFLATVNP-DTGIIATNSPTVIGYQSIPTVIGSEPRQVGFAYPS-LS--YH-TSPES-----VMD-AW-YK--SKTILKNQVATQLCPYGL-----  
SEKSYIDIGNTDSTAK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---SVETCFLHMRFPVVDVLAIDLSGAIATV--IN-----I--FSDK-LGKVMKKIFSONYAMLESFSDIDW--GKLP--L-SITMFAQN-PVTDANRNSVVITKLGPKDY-----IQRV---D--SKH-----  
YDTCRSIRLPHLVDLGLGAIATRAFQPP-----LTMETLAFWQRDIDTLKYIWDW--KCLPT--LSFLVDLTV--PKKKKGSYSTVKITLGPCKY-----LQI---G---  
PNQ-----YFSGVGFSETS-----ITLGIPTLRLKVVFDRE--GGRIGFG--  
>BATEDRAFT\_35816-----TSHTAKTINNTL---NRDYGDT-  
SVKCLVSDTLVIA-GVAIPNQS--ICSAIATNSPTVIGYQSIPTVIGSEPRQVGFAYPS-LS--YH-TSPES-----VMD-AW-YK--SKTILKNQVATQLCPYGL-----  
KNVFPQNKVYFNRRVNSLESNTGLVPNAGEITFGAPDNRF-----TGNFKMNPITV-----TESHWAVAFDSVTI--NGRTTSA-----SKISA-----  
LFDGTSLIYLNQPIFNAVNSAMGGKIRNSD-----TYQVDC--TKVKS--FPVPTFTN-----GNSFTLNDQD-----VIVL---Q---  
GQT-----CISLFSASGDL-----TIFGASFLRQFYTSFDYT--LGVGL-----  
>BATEDRAFT\_92765-----SGEPV---TIDY-KGD-  
EYNGVSSNAVVITP-GTSITDINLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--PQT-----AMD-VL-YN--GGVIPNNEIGLQLCPYEM-----  
TSNFINIGNTDVTAK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-KDGRTLYS---SVETCFLHMRFPVVDVLAIDLSGAIATV--IN-----I--FSDK-LGKVMKKIFSONYAMLESFSDIDW--GKLP--L-SITMFAQN-PVTDANRNSVVITKLGPKDY-----IQRV---D--SKH-----  
FRFAIKAGPNDN-----AALGIPFMAQLGTFDRA--HKRIGFG--  
>BATEDRAFT\_90625-----SGEPV---TIKY-KGD-  
DYNGVSSDAVVITP-GTRITDINLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--PPAT-----AMD-VL-YN--HGVIPNNEIGLQLCPYDI-----  
LQESFINIGNTDVTAK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-EHGRTLYS---SVETCFYMHFRPVVETLVAIDLSGAIATV--IN-----I--FSDK-LGKVMKKIFSONYAMLESFSDIDW--GKLP--L-SITMFAQN-PVTDANRNSVVITKLGPKDY-----IQRV---D--SKH-----  
VVFVAVQAGSNEK-----AALGIPFMAQLGTFDRA--HKRIGFG--  
>BATEDRAFT\_23759-----SGKPV---TIKY-RGK-  
EYNGISSTAVKIS-GTRITGIDLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--TSVP-----AID-AL-YN--GGVITNNEVGLQLCPYEM-----  
LSDSFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-EHGRTLYS---SVETCFYMHFRPVVETLVAIDLSGAILVK--KT-----KSEKHK--LSETEIKKIFWENCLMFKSNYNIKW--NKLPS--L-SITMFAQN-PVTDANRNSVVITKLGPKDY-----IQRV---D--SKH-----  
SKHKYLLTVCIRFAIKAGSNDN-----AALGIPFMAQLGTFDRA--HKRIGFG--  
>BATEDRAFT\_22623-----NGQPF---TIKY-KNE-  
EYNGVSSDAVVITP-GTSITDINLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--PPAT-----AMD-VL-YN--HDVIPNNEIGLQLCPYEM-----  
LQESFINIGNTDVAEK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-EHGRTLYS---YHCTCFYIRFPKTVVDVLAIDLSGAIATV--IN-----I--FSDK-LGKVMKKIFSONYAMLESFSDIDW--GKLP--L-SITMFAQN-PVTDANRNSVVITKLGPKDY-----IQRV---D--SKH-----  
FLFTVEVGSNDN-----VVLGASFMTLRLGTFDRA--NVRIGFG--  
>BATEDRAFT\_88273-----NGQPV---AIEY-KGE-  
EYRGVSSNADVTIP-GTRITGIDLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--SPAT-----AMD-IL-YT--NDVIPNNEIGLQLCPYEM-----  
LSDSFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-EHGRTLYS---SVETCSAIHLPETVVAALINAILDSGAIATV--SI-----L--FKNK-LGKIMVKINLQGNFLISKDFKIDW--DKMPS--L-SITMHAET-PVTDDNRSVVAIKLGPCKY-----IQRV---D--SEDCYKLT-----  
IMFIVTAGSNDY-----AALGIPFMAQLGTFDRA--HKRIGFG--  
>BATEDRAFT\_28777-----YTPSGQPV---TINY-KGK-  
EYRGVSSDAVVITP-GTITDIDLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--PPT-----AMD-IL-YN--YGVIPNNEIGLQLCPYEM-----  
TSKSFINIGNTDVAEK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-ENGRALYS---YHCTCFYIRFPKTVVDVLAIDLSGAIATV--SI-----L--FKNK-LGKIMVKINLQGNFLISKDFKIDW--DKMPS--L-SITMHAET-PVTDDNRSVVAIKLGPCKY-----IQRV---D--SEDCYKLT-----  
YLFVAVQAGPNDN-----AVLGSFMTLRLGTFDRA--HKRIGFG--  
>BATEDRAFT\_26088-----SGEPV---TIGY-KGK-  
QYNGVSTTTVTIP-GTSITDINLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KHH--PQT-----AMD-IL-YN--HDVIPNNEIGLQLCPYEM-----  
TSNFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-ENGRALYS---YHCTCFYIRFPKTVVDVLAIDLSGAIATV--IN-----I--FSDK-LGKVMKKIFSONYAMLESFSDIDW--GKLP--L-SITMHAET-PVTDDNRSVVAIKLGPCKY-----IQRV---D--SEDCYKLT-----  
FRFAIKAGSNDN-----AALGIPFMAQLGTFDRA--HKRIGFG--  
>BATEDRAFT\_86720-----SGEPF---IIKY-RDK-  
QYKGVSTAAVTIP-GTITDIDLPLVAVKQSPDLVGINPKL-DGVFGFGHPS-LS--KYH--TSVP-----AMD-VL-YN--GNTIPNNEIGLQLCPYEM-----  
ISNSFINIGNTDITEK-----CG-TDGRSVAVWVDSPP-----DQFTVNIKSILV--NGEKVDL-----PAEFQKRV-ENGRALYS---YHCTCFYIRFPKTVVDVLAIDLSGAIATV--IN-----I--FSDK-LGKVMKKIFSONYAMLESFSDIDW--GKLP--L-SITMHAET-PVTDDNRSVVAIKLGPCKY-----IQRV---D--SEDCYKLT-----  
FRFAIKAGSNDN-----AALGIPFMAQLGTFDRA--HKRIGFG--  
>BATEDRAFT\_92592-----QFNSSASSGSGT---QQIEYGDGS-  
KVSQCMYSQVTFVLA-GIQSNQK--FCAAT-SYLPGLNPTI-DGIVGMAPAS-----FQ--EPSN-----IFQ-HL-----  
QAQLPNSQVGFNRSVTTLAAGSAVSRGAGIITFGLNSDLY-----SGSIAWITIP-----DLTRWIVPFKGIIF--GDMNRI-----MDSFLKQV---NLSA-----



IFDTGTTFFVLQVDFPLNSIMGGIDQNTT---GT-----YILDC--RSVSN--LPTLTISFI-----EGVTHTLTWDKQ-----ILIV---Q-----  
NQ-----CISIFTRNNGAVDTGELNRTVTVPP--AIGASFLRHFTYCFDYN--AKRIGLAT--  
>BATDEDRRAFT\_22618-----NGEPV---TIDY-KGN-  
EYRGISSDAVVTIP-GTRITDIKLPVLAVERKQSPDLVIGDPEF-DGIFGFGNSL-LS--NHH--SRIT-----AMD-AL-YN--GGIIPNNEVSLQLCPYEM-----  
TSNSFINIGNTDVTAK-----CG-TDGRSVAVWVDSPP-----DGRHTVNIKSILI--NDKPVNL-----PEEFQKRV-KDGRITLYS---VIQTCFRYIRFPEVVVKALIDAILDSGAIATV-K-  
KA-----M--YSNK--LNSEEIKRIFWEHYAMLESKLNIDW--GKLP--L-SITMFAQN--PVTDDNRNSVVTIKLGRPDY-----IQRY---D--SER-----  
FVFIVAAGSNDN-----VILGIPFMTLRLGLTFDRA--HKRIGFG--  
>BATDEDRRAFT\_28513-----SGEPV---TINY-RGK-  
QYRGVSTAVVTIP-GTRITDIKLPVLAVERKQSPDLVIGDPEF-DGIFGFGYTS-LS--KHH--PQIT-----AMN-TL-YN--DGVISNNEIGIQLCPYDI-----  
LHESFINIGNTDVTAK-----CG-TDGRSVAVWVDSPT-----NDRHTVNIKSILI--NGEVEL-----PAEFQKRV-ENGRITLYS---VIQTCSTFMYPRVVKALIDAILDSNAITVK--  
KT-----V--FSNK--LNKKEVKRIFWEHYAMLESGFNIDW--NKLPS--FTIVMFAQN--PVTDDNRNSVVTIKLGPQDY-----IQRY---D--SEK-----  
FWFTVTAGSNDY-----AALGISFMTLRLAVTFDQL--NKRTGFG--  
>BATDEDRRAFT\_25617-----IDSTTORPVVHPI---VHREYGDGT-  
SVTCTIISDVVSIA-GISIPNQT-----ICAASQVKSIESISL--DGILGLGPPN-----SV--DPAD-----LFS-NL-----ENLSERKVSFYDRVT-  
PINQLQIRDAGEVTFGVPNPARY-----TGNSFWSPIVK-----TDSHWALTSSVVI--DGKTFSS-----TPIVA---  
LMDTGTIIILDKGTFNAINSAMGGVSVQGL-----YELDC--TMVSK--MPSIQFNQ-----GVTLTMTWDDQ-----YFVI---E---  
NQY-----CVSVFGYSANLPPNM-----AIFGAWFLRSFYTSFDYT--GRQIGFAT-  
>BATDEDRRAFT\_27277-----LV---TINY-RDK-  
EYSGSSDSDTAVTIP-GTSITGINLPVIAVERKQSPDVSIGSSNL-DGVFGFYSS-FS--KHH--PPIT-----AMD-IL-YK--DGIIPNNEIGIQLCPYDI-----  
LHESFINIGNTDITAK-----CG-TDGRSVAVWVDSPT-----NDQFTVNIKSILI--NDEQVEL-----PAEFQKRV-EDGHTLYS---FIQTCAYMYLPKTVATLINDLDSGAIATV-K-  
GI-----L--FRNK--LKGIMKSLTQNGYIMPKSEFKIKW--EKLPS--FTIVMFAQN--PVTVNNYSVVTIKLGRPDY-----IQKT---D--SDE-----  
FLFTVTAGPNNN-----AALGISFMTLRLAVTFDQL--NQRIGFG--  
>BATDEDRRAFT\_26741-----SGNPV---SIKY-KGK-  
EYRGVSTAVVTIP-GTRITDISLPVIAVERKQSPDVSIGDPEF-DGMFGFAYPS-LS--KHH--SRIT-----AMD-AL-YS--NDAIPNNEVSLQLCPYEM-----  
LSDSFINIGNTDITPK-----CG-TNGRSVAVWVDSPP-----DGRHTVNIKSILI--NGKQVQL-----PAEFQKRV-KDGRITLYS---VIQTCFFHHPKVVVKALVDAIVGSAITVK--  
KT-----M--FSNK--INSEIDIDEIFWKHYAMIESKYDIDW--SRLPS--LTIKMAFQT--PVTDDNRNSVVTIKLGSQDY-----MQNI---N--SKH-----  
VMFTVVRVGSDDY-----SILGMSFMNRLAVTFDQL--NKRIGFG--  
>BATDEDRRAFT\_24300-----TSNGQPV---TIYY-KGE-  
EYNGVSTAVVTIP-GTSITGANLPVIAVEKQSEDLVGIHPEF-DGVFGFAYSS-FS--KRR--SPAT-----AMD-AL-YK--DGNIPKNEVGLQLCPYGM-----  
LSDSFINIGNTKVTAK-----CG-TDGRSIAWVRSPS-----NDQFTVNIKSILI--NEKPVEL-----PAEFQKRV-KDGRITLYS---VIQTCCLTYMYPRVVDLVAIVDSGAIATV-K-  
KI-----M--LSNK--LNSREIEKIFLKNYAMLESGFIDW--NMPT--LTIITMFAEK--PVTVENSNSVVTIELGPQDY-----MQRY---D--SKN-----  
LVFAVKAGSNDY-----AVLGISFMTLRLAVTFDQL--NARIGFG--  
>BATDEDRRAFT\_25148-----SGNPV---TIKY-KLK-  
EYNGFSSTAVVTIP-GTRITGVNLPVIEIEKQASLVIGDITLQGVFGFYSL-LS--KHH--TSVP-----AID-AL-YN--DGVIPNNEIGIQLCPYDM-----  
LQESFINIGNTDITAK-----CG-TNGRSVAVWVDSPT-----DGYFSVNIKSILV--NGKRVOL-----PAEFQKRV-ENGHALYS---YLHTCLTYMHPKTVATLVAIVGSAITVK--  
KT-----K--LRRK--LYPEEIDDVFLNSLMSQSDYIDW--SKLPS--FTIVMFAET--PVTDDNRNSVVTILGRPDY-----IQKI---N--SED-----  
FVFVAVGVPNDY-----AVLGISFMTLRLAVTFDRA--HKRIGFG--  
>BATDEDRRAFT\_25223-----YNGPTLDYMGQPNAMKISGYSASKA-  
GWTGYGLSLFVGLS-GTDTTADNAPIVNAIRQTANPIFDIGDQDQGLGLAYS-AA--VYK--TNPST-----VMD-AW-VA--AGQFAKNEVAFRACPWEK-----  
ESQSSIDFNTQPVNN-----CG-KNGSPNVWKSPE-----QGLFSVDIKGISV--HGTPVRL-----PSAFQ-----IDRNGR--LS---IIDSCTDLKLPNVNAIRDIMIRLGGFPPL--  
NT-----ARTPAPTR--PINL--ALLPS--ITFHI--ATG--GAMRSAPGTSISVTIGPQY-----LIYR---P--G-----  
YWYQMAAFRSDDSS-----VILGPPFTSLNIVHRT--NHQIGLS--  
>BATDEDRRAFT\_27292-----SSGKPV---TIRY-KSR-  
KYKGFSDTAVTIP-GTRITGINLPVIAVKKQASLVIGGPNQDQGVFGIYSS-LS--DHH--SRVT-----AID-AL-YN--GGVIPNNEIGIQLCPYKM-----  
LSKSSINIGNDVTPK-----CG-TDGRSVAVWVDSPT-----NDQFTVNIKSILV--NGEKVQL-----PKEFQKRV-KDGRITLYS---YLQTCFVYMYPRVVDLVAIVGSAITVK--  
KT-----KSKHKK--L-SKTEIKKIFWENRLILKSLINW--DRMPT--ISITMFAEN--PVTDDNRNSVVTIKLGRPDY-----LQRV---N--SKE-----  
FRFIVEAGPNN-----AALGISFMTLRLAVTFDQL--NKRIGFG--  
>BATDEDRRAFT\_23275-----SSGKPV---TINY-KSS-  
DYNGITSVSVTIP-GTRITGINLPVIAVKKQASLVIGGHPKF-DGVFGLGYTS-LS--KHH--TSVP-----AID-AL-YN--GGVIPNNEVSLQLCPYGM-----  
LSDSFINIGNTDVTAK-----CG-TDGRSVAVWVRSPS-----DDHFTVNIKSILV--DDEVEL-----PEEFQKRV-KDGRITLYS---IIFCTYMYRFPVVDLVAIVDSGAIATV-K-  
KT-----KSEHKK--L-SETEIDEIFLNSLMPKSTYIDW--GRLPS--LTIITMFAEN--PVTDDNRNSVVTIKLGRPDY-----IQRY---D--SKN-----  
FMFTVQAGSDDN-----AALGISFMTLRLAVTFDRA--HKRIGFG--  
>BATDEDRRAFT\_26425-----ESTPSGEPV---TINY-RRK-  
QYKGLTSTAATVIP-GTRITDINLPVIAVEKQSPDVSIGSSKF-DGVFGFHPY-LL--NRH--SRIT-----AMD-VL-YT--NNVIPNNEVSLQLCPYDI-----  
LHESFINIGNTDITAK-----CG-TDGRSVAVWVDSPT-----NDQFTVNIKSILV--NGEVEL-----PDEFQKRV-ENGRITLYS---VIQTCFRYMYFPVVAALVDAIVGSAITVK--  
NT-----L--FRNR--LKGIAVKNLQKNHMPKFEFKIKW--EKLPS--L-SITMFAEN--PITDENHDSVVTIKLGRPDY-----LQRV---D--SDE-----  
FEFIVAAGPNDN-----VILGIPFMTLRLAVTFDRA--HKRIGFG--  
>BATDEDRRAFT\_8959-----SGEPV---TIGY-KGK-  
EYKGVSTAVVTIP-GTRITDISLPVIAVERKQSPDVSIGSSNF-DGVFGFAYSS-LS--KHH--PPAT-----AMD-VL-YT--SDVIPSNEIGIQLCPYEM-----  
ISDSFINIGNTDVTAK-----CG-TNGRSVAVWVDSPT-----DDYFTVNIKSILV--NGKRVEL-----PAGFQKRV-EHGRITLYS---VMETCTYMQFPKVVVAALVDAIVDSNAIAID--  
IF-----N--FYR--LNNLQIENLWKNHLMPEKYFSINW--GKLP--L-SIVMFAET--PVTDDNRNSVVTIRLGRPDY-----IQRY---D--SKN-----  
FVFVAKAGLNDK-----ATLGMFSMRLGLTFDRA--HTRIGFG--  
>BATDEDRRAFT\_90577-----SGQPV---TINY-KGK-  
EYRGISSDAVVTIP-GTITDIDLPLVIAVKKQSPDLVIGGKLGQVFGFYSS-LS--KHH--PPTT-----AMD-IL-YN--YGVIPNNEIGIQLCPYEM-----  
TSKSFINIGNTDVAEK-----CG-TDGRSIAWVNSPT-----NDYFTVNIKSILV--NGKQVQL-----PEEFQKRV-ENGRALYS---YLHTCFYMYRFPQAVVDLINDLNSGAIATV-K-  
NT-----MISKLGKIIKLLQNNHLMKSKYINIDW--VKLP--L-SITMFAET--PVTDDNRNSVVTIKLGPQDY-----LRSY---N--SKD-----  
FLFAVQAGPNDN-----AVLGISFMTLRLAVTFDRA--HKRIGFG--  
>BATDEDRRAFT\_24380-----SGEPV---TIGY-KGK-  
QYKGVSTAVVTIP-GTITDINLPVIAVEKQSPDVSIGSPNL-DGVFGFAYSS-LS--KHH--TSVP-----AMD-VL-YN--KDVIPNTEIGLQCYDM-----  
LHESFINIGNTDITAK-----CG-TDGRSVAVWVDSPT-----YDHTVNIKSILV--NGEVEL-----PAGFQKRV-EHGRITLYS---YLHTCTFMHPRVVAALVDAIVGSAITVK--  
NT-----KSKSRK--LNKKEIKRIFWEHAMPNSFNHIDW--SKLPS--FTIVMFAET--PVTDDNRNSVVTIKLGSQDY-----MQKI---D--SEK-----  
FVFVAVGVSNDY-----AVLGISFMTLRLAVTFDQL--NKRTGFG--  
>BATDEDRRAFT\_27300-----SGRNV---TINY-KGK-  
EYRGIDFATVVTIP-GTSITGILPVVAVKQSPDVSIGSPNF-DGVFGIYPS-LS--KRR--PQTT-----VLD-VL-YN--DGVISNNEIGIQLCPYGM-----  
RSKSFINIGNTDVTAK-----CG-TDGRSVAVWVDSPT-----NDRHTVNIKSILI--DGKQVNL-----PEEFQKRV-KDGRITLYS---YIHTCFYMYRFPVVAALVDAIVGSAITVK--  
KT-----KSEHKK--L-SETEIEKIFWENRLILKSLNIDW--SKLPS--L-SITMFAQN--PVTDENNSVVTIKLGPQDY-----IQRY---N--SKE-----  
FRFTVTAGSNDN-----AALGISFMTLRLAVTFDQL--NARIGFG--  
>BATDEDRRAFT\_26758-----SGEPV---SIKY-KGD-  
EYNGVSTAVVTIP-GTITGINLPVIAVERKQSPDVSIGGTLKQVFGIYHS-FP--NQH--SRVT-----AMD-AL-YN--GGAIPNNEVSLQLCPYDM-----  
LHESFINIGNTDITAK-----CE-TDGRSVAVWVDSPT-----NDQFTVNIKSILV--NGRPAEL-----PDEFQKRV-KDGRITLYS---RVETCFYALFPVVAALVDAIVGSAITVK--  
NT-----LRRKLKDEEIKKLLQANSMPKSNYINW--GKLP--L-SITMFAET--PVTDDNRNSVVTIKLGSQDY-----MWRV---D--SEK-----  
FRFAVKAGSKDH-----AVLGISFMTLRLAVTFDRA--HKRIGFG--  
>SPPG\_01941T0 QYYEITLGTPTQTFVSVL--DTGSSNLWVPTSCSSACWHLHRRFDS-----SKSSTFKPNGTEF---AIQYSGS---LEGISNDVLGVA-  
DLLVKDID--FGESVKEPGETFAYGRF-DGIFGLAYDN-IA--VK--RVVP-----PFY-QM-IQ--QGLLDEPVFGAWFGDQSN-----GGEGEITFGGIDKDH-----  
KGEITWAPVIR-----KGYWEVLQNAL--GGQDYG-----RTKRA-----  
AIDTGTSLCALPVEEADAINTRIGAKKNFNGQ-----YVDC--DKIST--LPALTLKFG-----DKEFTLEGKDY-----  
VLQVSGGPIGGNQ-----CVSGFMGLDIPAPAGPL-----WIVGDVFLRKYTYVDLQ--KNRVGFADA  
>SPPG\_00681T0 -YQGAIEGTTPQPMVSLF--DTGSSQLVWQTTTTGIDINRGRFRDP-----AKSSTFQATSQA-----DPIEYVDGT-SVQGFVKTVAIN-  
TLSPVNLQ--FEAATSIKSPNQNTSDM-DGIMGMSFSLPTT--AGGT-----ASPTW--ERVSAHQVTSPPVFGYI--DSTNQNGGLTLGGVDAARF-----TGGLT-  
WLPVAGSGPNKPEFVWQSLMTAVSPGSSRTLSL--PSNFA--T--VFDGTSLAVLP-VQTADQINSMLNLQVSNM-----PPFLYA-----  
TACGP--GKIPS--GFPDKFEFT--GGHVTISPDQY--LFMQPT--DIAGVTA--CVSGFAGQDIGHGTSSTRPQGAQPLPSAIFGNVFLRAFVTFVDS--NKQIGVAAA  
>SPPG\_07923T0 --ITTIGVGTPAQVMAVQI--DTGSSLFWLRSKCRGTSQGPVYDNTKSTSYL-----PPAPATALTGQR--RSIYVGDNT--KVECLGADTVMLG-  
TLVIPNQT--LCEADVQTTTIGSS--DGLIGLPGGP--AD--TATD--VFR-NM-IA--SKTISKPVASFVWYNSQR--FSDTNAQITFGGMDSSKF-----  
TGSFTWEPPI--TGRNHWSITFEGITL--DSAPLTQ-----NRTGMA--IFDTGTLLAIPSDTLSAIVLAA--NAKQLPNQ--  
SL-----YEIPC--DKVSR--IPPVTHIG-Q-----RRITLFAEQQ-----VFFV---D--GT-----  
CFLIYAASSTNLNVD-----VTLGALFLRHFTYVDFG--ASRTGLA-----  
>SPPG\_08789T0 -YYGPVTIGSQTFQVDL--DTGSSDFWLRGANQSSDGS CGNGQPA-----VSTREFKDTGSQF---QDSYSGS---ADGEIYQTYTLG-

GVTAKNAYFVSTNEQGFDTA-----DGLLGLGFAA-IS---NI--ASAT-----NGRAPIDELGLKSFIFYL---SNANDGQQLVTLTGADSSKY-----  
GGFNYPVLS-----RTYWQYSL-----SGGSVQV-----  
GNTKATFASRINAIDTGTLLIIIGKQKASAIARAAGADSN-----GNISC--SVART--GPKVVFNIN-----GVAYAIPPSVY-----  
VFED--Q--GQ-----CILIGQGGAAQAV-----AIFGDVIRQYITLFDVA--NSRVGFAL--  
>SPPG\_08444T0-----RIDVGTPPRPYVAL--DSSADLWLASPDCKTCVGYEYVA-----SKSTGKVSDDKF---VVAYNEGLRVDVTVTDDLLIFG-  
GFPIKQPP---FAQADKIPK--GFQDVPFDGVLGLAFSA-HS--EQK--APP-----LQ-SL-VD--QKVIKSFALHIPAGK--QATMTIGGIDPTKF-  
SGEIDFVVDN-----AAGQWLNLDIQA--QKGAVDY-----GTKKG---LIDTGSVLLGPMEDVRKVFVAAIPGSAEMANG--  
T-----FTVPC-----NQDNFALKLGGKDYGLNGVDLDEFVSAVGN--NAN-----  
CVAALSGDQIKS-----WVIGTFLKQFYTVWDL--VPRFGLAK--  
>SPPG\_04035T0-----IDVGTTPQSFKAIV--DTGSYDAFLKAKECLDTGCVCKDITYDGS-----KSSTFTTTGSPV---TLAYADGT-AVTGVAARDTTTVG-  
GVTMSNFTFLRVLRYKQASTNVTY---TAMLMGMPS-----SN--ATAGTPGRLSGSSLGRSV---TGQLSDAGIKPIFGLYPT-----LDGKPLLTLGGIDTTKF-  
SGDLTWDVPT-----FANSSAIDPVMAAGTAGMKAVMGAVKYPDGTENQV---AGLPI---LIDTGSLLFPQSFVTLGQSIGGTLQAQ-----  
ASGLQI-----YKVSC--DKIKT--LQDLTLTG-----GKTVSIPPSY-----IQNSFIRG---ETG-----CVLGFVSLGTEGALGGA-----  
ALMGNMLRAFYTAWNNG--DRQVGFAR--  
>SPPG\_02558T0 AYFGQVKGTPAQFTTAMF--DTGSYQFVWRSKLCTVQACQGHPKYD-----DLSSSYVSTNTKA--DLITYADGT-KVQGVYAKEKVSVG-  
SVAQGLTFEEVTDNLSLGAAY-----DSIMGMWCP--VD-----KPKS-----WFQ-TL-VQ--NGGVTSPVMGWVIDSTNT-----DGSITLGGVDSARF-  
TGLTQWVPSFG--FASNGGGGPFYIQQGLTV--AGSVTM-----GNITPPLSWSQGHFLS-----  
VFDGTSMVSPVTKVAADIIHAQFPAFIDPSRPGK-----DTGLWPPSPPHK-----YYTGW--CDLNT--LGNVTLVSVF-----GEEGLVSLTLEPHEW-----  
VLYIPKNNQPNY-----CLSFVGNDAVAQKVTVNGLIA---GILGNSLLRKFYTVFDWG--KNRTGFAL--  
>SPPG\_00268T0 -YYTSLVGTGPKWFSVVI-----DTGLWPPSPPHK-----EETGTQRNQGLT---SLAF-RSL-PILGASASGVV---  
DYVRIGLINTSQVFIQADQMNVPANVDGLLGLSFS--LS--WAN--SVVDPNLVKGSSIE--NL--YY--GRKQQPAFQVWLDKYSV--WSAAPGSTVGGELALGSGTGNPA-----  
RYTGPITWLSVFN-----TANWHVQLNGIA--GPDGYNL-----VPSGRAIRG---LIDTGTLLIVVDYVAARL--NGLLGAAGVGR--  
GL-----WAVSC--NKAKNSGVKITFTLQ-----NKFTLDAADL-----PTRVMPD--PNT-----  
CYAPFQARQNDVTDK-----WILGEVFLRKYIYDYN--VQS-----  
>SPPG\_05983T0 -FIQGEIGTTPQKLTVRF--DTATQLSWKKAAYKEPKKYDDYNSYDKYDEYKNDYPERELVYFGDPDKSSTWQDGGREG---DLEY-YGQEKVIVKEGRDVMNVG-  
GIEAT-----VTFGLRQNEVSEANETV-DGHFGLSLRN-----PDL-----FDPWL--YQAVKDGVCDFALDPPVPEPKAYAPQTPSYGKRQDSYDYEPKPKPPTAQLSICG-  
YEGQMPTRFNHVT---QRGLQYGYWQLNKKIKV--GQSLVPLKESREDPYGYQSYE--PKQEKIDA---LIDTGSFIMLPKIAVDK--IHLLGAYGAGVR--  
YGYSEYKDDYKDDYKDKYKESHSRRATSMMANSTSGFW--RSQTG--IKSHDLCTV-PCASVPKLANITLTFDQGDY-----PILPAEY-----  
IQKDPDDY-----GKQCYSVFTTFK-----  
>Hp\_gm\_asm116-0.104 QYGEITLGTPTQTFVVF--DTGSSNLWLPSTCRSSIAICLHRRYDA-----SKSSSYVANGTEF---AIQYGTGS--  
LEGVISEDLSLSDSLTIVGQN---FGESVEPIGTAVGRF-DGIFGLDYDT-IA---VQRVPPFY-----QM-VN---KQLLDEPLFGVWLGSDAS-----  
GSEGGEGEISFGAVNHDFH---KGPITWAPVVR-----KAYWEALQSVTL--GGKPLAI-----KSSSA-----  
AIDTGSLLFALPTAEADAINKAIGGKGNWQ-----YTIDC--AKLDS--LPDLGLQFG-----NKTFTLTGNDY-----  
VLKVSQPIGGGEQ---CVSGFVLEIPAPIGI-----WIVGDVFLRKFYITDIA--RNRVAI---  
>Hp\_gm\_asm242-0.207-----TAVNTNVN---PTISYDGT-  
TVDCTVYDLSLTFG-DL SVTKQK---VCVATRFATSASRTMN-AGILGLGNTL--N--DPA--NVAD-----GVS-SI-----LSSFTDKIVSFYDRNVV-  
VNLGTEETKNAGEVTFGPNARSF-----KGLSWAPINK-----IADFWTLPIITGASV--GSYSYI-----TRTSYV-----  
VMDTGSLLITIDQPVADGINLALGFTYAGSGL-----YTIDC--TKLKS--SLPTITITLG-----GLTFNFGAAA-----IAVVDPTT---  
NT-----CISGVTAPTSANSP-----RIFGVAFRLNLFVAFDYSS--GGRIGFAP-----  
>Hp\_gm\_asm117-0.23-----  
TLSPE-----DGLIGLPPQ-SV--SS--EPAD-----LFA-NL-----  
RSSFNQSKISFFYNRAVNSIDGSEVVPNAGEITFGDNPAPF-----TGSFTWIPINP-----SDPHWAVTIDSITV--NGQSMF-----GQTA-----  
LMDGTTLYIITNPMFATINAQM---NGIATN--GM-----YQVOC--TKRVS--FPITFSMG-G-----ASFTLTDWQK-----VVVL---Q---  
NRF-----CVSVFSEALDGLP-----SILGVSFLRHFYTSDFSG--QGRIGIAA-----  
>Hp\_gm\_ctg07303-0.1-----  
-----VNSTE-DGIIGLPPG-GV-----STAD-----VFK-NL-----KTAFTESKISFYHDKRVE--DAGGVFAAGGGEITFGVNPNNRY-----  
TGSFTWFPIDP-----TNQHSWTAMLSVSI--GGASVDV-----GSI-----LIDTGAATNLDANTV-AFINQLGATQVAGQ--  
RF-----PQVPC--DKVSS--LPPVVKFG-P---TPNTAVSFASWSF-----IVYNPAD---KN-----  
CYSTLNAPGPASNK-----TVIGAVMRHFYTSYDYD--NRMIGFA--  
>Hp\_gm\_ctg01303-0.7-----ATVQLGSQOTSLDVL--DTSSTLFWHSPLTLN-----TRLFPF-----ILPWWMLSDTNNSPQISRLPLSSNGKITGFRN---QSIYPDGS-  
VWACSVTYDLSLTVG-SVQISSQG---ICVADSYTSLGGNAPYD--GVMGIGNL--A--DPT--NHAN-----APA-SI-----LNGFVDDKVSFFYNRQST-  
SSISNETSNAGEITFGTNAARY-----TGSINWPIAQ---TGTPAWGLSITVTA--GAFSATA-----KAGAAI-----  
VVDTGYPYFALDITVAQI-----  
-----NKALGFS--  
>Hp\_gm\_ctg03169-0.2-----  
RIDCSLYKDSVTLG-----DVTLPAAITCVTNSYNQTTNPR--QSVLGITPNI---TAHPADPAD-----LTA-QI-----LAGYTSKVSFFNRSRM-  
TVLDTNIVDQAGEVTFGAPNARY-----TGTGLSSVILPS-----STVSQWLFNSITA--GNTSFQF-----NGTVKPI-----  
SFQSTTFIYLDTNVADISINAAIGFTRASNGD-----NVVDC--AKLKTTFPKLYMSVG-----TVLYTIGILNV-----VNVF---Q---  
GN-----CISGIYITGEN-----VLGSVFTRSFYTFDYD--TNSITTAQ-----  
>Hp\_gm\_ctg07229-0.0-----NVLF--DTGSNVFVSSSSCA-----GCTKA-----Y-----NTTASASIKSTSI--LSFGYDGT-  
QVNCVFTDITLS-GVTLPGQN---VCVASSLDPV-NSP-E-DGIIGLPPQ--P--NP--SQAD-----VFA-NL-----KTSFAESKISFYHNRQVE--  
DTSGDPAPNSGEITFGVPNATRY-----VGNFF-----  
W-----  
>Hp\_gm\_ctg13909-0.3-----  
QWIGFSGFSDQVLA-NTTIVATNAPTIGAIQNGPPIPTGPPDSEGLFGVAYS-LSMYGN-KNPGT-----VVD-AW-YQ--SGTMAKNQFLFHGCPYDK-----  
QSQSFDFGYTQPVYTI-----CGNTAGTPYVWAKSPQ-----LAWYTLDIRAILV--NGVAATL-----TSAFQN--PTGSMRWS---  
IIDSCTSLVMLPPAAFNALTAI-----  
KN-----  
>Hp\_gm\_asm117-0.25-----LGTIQVGTTPVPLNVLF--DTGSDIFWINSVQCSGGNGCLDNSTAYDL-----TKSSSAVPLSKSI---PPVYGDNT-  
TIQCSLFTKEVTVG-GITLVSQO---VCVATQVFNPLNTNE--DGIIGLGVPS-----SGVT-----LA-NL--FASLKLRLPANMASFWYNNRNL--  
SSTDLIEHGEIAGLRPDSRY-----IGFAWL PVL P-----KQAHWTVAMMISV--DDHAMT-----TGSTA-----  
IIDTGSITILDGTLASEINTRLGGWPASTTS-----DVF-----YLFDC--ATVQS--LRSVFTLA-----NFNFTLTDWKL-----FYTTTLNG---  
KTF-----CISTLWKSMPGF-----NILGCTFLKHFYTAFDQF--NLRVGFAT--  
>Hp\_gm\_ctg09870-0.5-----APIQLGSQKSHIDVIL--DTGSNVFVWSVAGCN-----GCISPQ-----YDT-----KKSSTAKTSGNHN---AVLKYGDNT-  
VVECAFNNDTLALG-DITVSTEG---VCVATKYTPGSEVAHDF-TGILGIGSSL--E--KST--NLAN-----APA-SI-----LAGFSEKISFYDRSVL-  
VNLARNQTKGAGEVTFGPDSTRF-----TGDIIHWSKITK-----ANSFWEVPITSVEV--GTFKHITY-----DSAQTI-----  
ILDSGTSIYLDQDVAADVANTLGFASAGDF-----YTIDC--SKLAS--NNSRTSFSIG-----SVKATLSTIAL-----TVVV---E---  
GS-----CFAIVANPPNSL-----RVLGAGFLRNFYTSFDYD--TASVGA--  
>Hp\_gm\_ctg01127-0.11-----GTLISIGTPAQNLNVQF--DTGSSYLWVSGPQCDTGTCAQSKKFPN-----SASSSFGPAPDPAVASHTYGGDST-  
QVACTVGIIDTINLA-GVPPANAT---VCVANDVSGSAGV-----DGMIGLGPV-----GQ--ADTS-----IVA-WI-----KSSFAQPYMSFWYNRAGP-  
ANGPNAGEITFGGINPARV-----NTQKPAWLPPL--MTQDTSAWTVSLSAAAV--GSQVAT-----QGTQA-----IIDSGLTILPRAVFNGL--NAVQATLDPNL--  
GV-----YTFDC--GKVAT--LPPISFTA-GSPHF-----YVLSAQGIY-----YASG-----ST-----  
CAWGLTPTDITL-----AIFGVVFMRFQYVTFDFTG-PMQIGLS-----  
>Hp\_gm\_ctg01127-0.10 ---GYVSIPTPQEFVQVQF--DTGTSVSWRSTACRNSGCLPGDISFN-----PTASSTYKAGNST--QSIYDGT-  
RVNCRIVHDVIAVA-GVQLKSNN---ICIATEIITPGSSSL--DGLFGLAPPK-----QEATLQSDQEED-----  
AIAGEITFGGRNPSRF-----VNDTIIWLPVV-----NATFVWVAFNSMQY--GNVTLQI-----TDAMRHA-----  
IIDTGTLLNLPAAFIDVNNKMMGKLNQYGL-----YELDC--RKVTS--LPNVTFSLA-----GHDFLTYQDL-----VLTD-----  
SET-----CVSIFGRTPDTF-----TVFVSVFLKYYITFDLA--GSGVFAQ--  
>Hp\_gm\_ctg03150-0.14 ---TSISIGTTPQSLYVVP--DTGSWMLWIKSSQCT-----QCA--PPVYNG-----KQSTYRSQGQIA---SPIQYDGT-  
SILGFYCSDDVTIG-SLMPNFV---FTEASYV---NRTRSTL-HGVLGLSFP-----SS--QPID-----HFFTRLNQT--SDPASAPVFGYIEQNGQ--  
YGLWTVGADIGRY-----SGDLTWYPVVS-----NQWLLQTTAFFV--GDTQLTS-----IPNMRM-----  
MFDGTGSLTMFPLNVAKALNEAMLLPILPATDPNN-----LPQ-----YGMPCFDGVIPK-NLPNITFSFQ-----GASQGITPREY-----MYIG---  
SISGNLY-----CFSTIIGNGDGL-----AIFGNALLRRFYTVFDVQ--NAKIGVAV--  
>Hp\_gm\_ctg01303-0.6 ---GTLVGSQKALDVLV--DTGSTVLWISSAICT-----GCLVTT-----YDP-----RASSTAKQTLPP--KTINYADKT-  
AVTCSYVTDISGL-DLSPVSSG---VCVATMFATSDDRQRN-PGIMGVGWDL--A--DPN--NPAN-----GPA-AL-----LAGFSDKVSFYDRSVV--  
VLSGTEFPNAGEVWGPAPNSRY-----NGSISYPIIK--TAGSIFSNYMLPITSLSC--GSYVASL-----SSSAV-----VMDTGTAMAI--DSTVAANINTAFG---

FTLS--SN-----GDYVIDC--SKLTS---GTFPQL-KVTLGG---ITFTLGIGNI-----VIVY---N---GV-----  
CTSGIVGGPVDT-----PLFGVVFLRNHFVTFDSA--GGQIGFA--  
>Hp\_gm\_asm375-0.190 ---GSVQLGSQKAALDVVL--DTGSTVFWVSSGICD-----GCTFTQ-----YNP-----NQSATAHSTGIQN--PTMVYGDGT-  
TVDCFTFFDVSVVFVGDITLPSEG--ICVATKFFAAGLKNLG--GIMGIGKIL--N--DDN--NRAN-----APP-AL-----LASASEKKVSFYDRSIE-  
IALSGDVRDNVGEVWAPNARY-----TGQINWTPIMP-----TNNYFWTLPLKSITI--GSFSRTF-----NDQPI-----  
IMDSGTSLLLLTDSALVDSINSALGYTVGSGQ-----FATIPC--SRI---WDGTVFVKM-----QITLGNVNF-----  
QLSIANTMIVLGN-----CASGIIKGGD-----NIFGVFLRNFMTSFDYT--AGAVGFAQ-  
>Hp\_gm\_ctg01383-0.6 -----TAFQY--  
GDTLLEGTIVSDTVGLADQQSFTSQNIGQCVAS-----FMNSDF-DGIFGLGPG-SS---LN--GLST-----PLQ-DL-AN--QGLLPANIFGLFLATGDS-----  
TASALTLGGTDPST-----SADINWVPLT-----GSQRWQVTLDSLAV--LPPSSV--FSQLLNTSSQPTVIASG--MQA---VFDTGTSLIAMP-VQYADAIHALLAPSVLFNN--  
RL-----RLIPC--MNPS--ISIKLNG-----IEFILTADY-----IIPF---G---FGY-----  
CVSAFVGLNIENV-----IVLGDFTLRKYYSVFDVD--GARVGLV--