

>C\_reinhardtii\_A8IKQ0

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>Pp1s153\_72V6\_1

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>Pp1s20\_373V6\_2

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>A\_thaliana\_P25851

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>Osmunda\_UOMY\_2080119

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>H\_ciliata\_YWNF\_2001606

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>O\_sativa\_B0LSR2

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>Populus\_trichocarpa\_A9PGB1

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LKT~SDPAKASLADCL~~~~~QAGSEQVAAGYVIY  
GSSVVMVYTTG~~HGVHG~~FTY~~~DPTIGEFLLSDENITTPKRGKYISMNEGSAQ~F  
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KK~~~STDEPSEKDAL~~~~~QPGRNLVAAGYALY  
GSATMLVLAMD~~CGVNC~~FML~~~DPAIGE FILVDKDVKIKKKGKIYSLNEGYARD~F  
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>X\_tropicalis\_F6XZD1  
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KT~~~TEGEPTEKDAL~~~~~QPGRNIVAAGYALY  
GSATMLVLATE~~CGVNC~~FML~~~DPAIGE FILVNDVKIKKKNIYSLNEGYAKY~S  
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>C\_elegans\_G5EBJ7  
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GSATMVVLSTG~~DGVNG~~FTL~~~DPSIGE FILTHPNMKCKEKGSIYSLNEGYAQT~W  
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>A\_thaliana\_Q9MA79  
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LD~~~HTDEPTTADVL~~~~~KPGNEMVAAGYCMY  
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>O\_sativa\_Q0JHF8

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IK~~~DKENVTLEDVL~~~~~QPGKNMVAAGYCMY  
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>Pp1s1\_300V6\_2

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>D\_alaskensis\_Q30ZN0

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RK~~~PGASGSKDVT LGDVL~~~~~QSGVEQVAAGYFLY  
GPSTMLVYSSG~~QGVHG~~FTL~~~DPSVGEFLLSHPDIRYPEQGRIYSVNESYWHY~W  
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>Pp1s385\_43V6\_1

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>Populus\_trichocarpa\_B9GTJ7

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VK~~~DGHEPTLNDVL~~~~~QPGKNMLAAGYCMY  
GSSCMLVVLSTG~~SGVNG~~FTL~~~DPFLREFILTHPEIKIPKKGKIYSVNEGNAIN~W  
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>Populus\_trichocarpa\_B9H7R7

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VK~~~DDHEPTLDDVL~~~~~QPGKNMLAAGYCMY  
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>Tetrahymena\_thermophila\_TTHERM\_00058590

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RQT~EEETGATIEDLL~~~~~QDGRSLVAAGYCLY  
GSSTHLVLC TG~~HQVNG~~YTL~~~DPSLGEFLLTHPDIKIPKRGNIYSINEGNSTY~W  
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>T\_erythraeum\_gi\_499929778

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>Synechococcus\_elongatus\_Q5N163

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GASTLLVYSMG~~QGVHV~~FVL~~~DPSLGEFVLAQSDIQLPNSGQIYSVNEGNFWQ~W  
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>Anabaena\_variabilis\_Q3MCI4

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>Agrobacterium\_rhizogenes\_A8W040

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>Bradyrhizobium\_A5E987

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GPQTVFILATR~~TTLAQ~~FVL~~~HR~~GHFFLVSDSLRIPDRTEFAINASNYRH~W  
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>Bradyrhizobium\_A5EQ67

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LH  
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>Methanogenium\_boonei\_A7I8R6

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GH~~~~~VL~~~~~EKGTKMIAALYMLY  
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>Methanogenium\_labreanum\_A2ST39

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GD~~~~~VL~~~~~QAGNKLRAAFYMLY  
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>Haloarcula\_marismortui\_Q5V3Z1

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>Haloarcula\_marismortui\_Q5V311

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AELP~~~~~AAGREMVASLMVLY  
GPYTTLTIARSDRDVVQE~~HLL~~~RDGHSERWQFELPAEATVVGLAGKTGERSDA~F  
NDIAQSFERDL~~~~~KLRYGATVADLAQVLEYG~GLFGYPVT~~~SGYPNG  
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>Pp1s41\_162V6\_2

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GPRTTYVVAINGFPGTHE~~FLL~~~~MDDGKWQHVKETTEIKE~GKLFSP~~GNLRATF  
DNADYEKLINYY~~~~~VSEKYTLRYTGGMVPDVNQIIVKERGIFTNVT~~~~SPTKA  
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>Pp1s429\_29V6\_2

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GPRTTYVIAINGFPGTHE~~FLL~~~~MDDGKWQHVKETTEIKE~GKLFSP~~GNLRATF  
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>C\_reinhardtii\_P46284

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ALKYS~HVCKLACSEEVPEPVDMMGG~~~~~EGFCVAFDPLDGSSSDTNFAVGTIFGVWP  
GD~~~~~KLTN~~~~~ITGREQVAAGMGIY  
GPRTVFCIALKDAPGCHE~~FLL~~~~MDDGKWMHVKETTTHIGE~GKMFAP~~GNLRATF  
DNPAYERLINIFY~~~~~LGEKYTLRYTGGIVPDLFQIIVKEKGVFTNLT~~~~SPTKA  
KLRILFEVAPLALLIEKAGGASSCDGKAVSALDIPILVCDQRTQICYGSIGEVRRFEEYM  
Y

>Mesataenium\_endlicherianum\_WDCW\_2047154

DLARLMVCMGEALRTIAFKVRTA~~~~~SCG~~ATACVNTFGDE~~QLAVDLLADKLLFE  
ALKFS~HVCKYACSEEVPELVDMGG~~PDEGGFSVAFDPLDGSSIVDTNFTVGTIFGVWP  
GS~~~~~KLTG~~~~~VTGRDQVAAAMGIY  
GPRTTYVLTIAGYPGTHE~~FLL~~~~QDDGKWMHVKETTTHIGE~GKLFSP~~GNLRATF  
DNPEYKELINFW~~~~~VNEKYTLRYTGGMVPDVNQIIVKEKGVFCNAN~~~~SPSTKA  
KLRLLFEVAPLGLLVEQAGGYSS~DGFI~SVLDKNIEFTDVRTQVCYGSKNEVQRFEEYL  
Y

>O\_sativa\_Q01M83

NLIRLLICMGEAMRTISFKVRTA~~~~~SCG~~GTACVNSFGDE~~QLAVDMLADKLLFE  
ALEYS~HVCKYACSEEVPELVDMGG~~PVDGGFSVAFDPLDGSSIVDTNFTVGTIFGVWP  
GD~~~~~KLTG~~~~~VTGGDQVAAAMGIY  
GPRTTYIIALKDCPGTHE~~FLL~~~~LDEGKWQHVKDTTTTIGE~GKMFSP~~GNLRATF  
DNPEYDKLINYY~~~~~VKEKYTLRYTGGMVPDVNQIIVKEKGIIFTNVT~~~~SPTAKA  
KLRLLFEVAPLGLFLIEKAGGYSS~DGKQ~SVLDKVINNLDERTQVAYGSKNEIRFEETL  
Y

>A\_thaliana\_P46283

GLRLLMCMGEALRTIAFKVRTA~~~~~SCG~~GTACVNSFGDE~~QLAVDMLADKLLFE  
ALQYS~HVCKYACSEEVPELVDMGG~~PVEGGFSVAFDPLDGSSIVDTNFTVGTIFGVWP  
GD~~~~~KLTG~~~~~ITGGDQVAAAMGIY  
GPRTTYVLAVKGFPGTHE~~FLL~~~~LDEGKWQHVKETTEIAE~GKMFSP~~GNLRATF  
DNSEYSKLIDYY~~~~~VKEKYTLRYTGGMVPDVNQIIVKEKGIIFTNVT~~~~SPTAKA  
KLRLLFEVAPLGLLIENAGGFSS~DGHK~SVLDKTIINLDDRTQVAYGSKNEIRFEETL  
Y

>Osmunda\_UOMY\_2008522

NLARLMVCMGEALRTIAFKVRTA~~~~~SCG~~ATACINTFGDE~~QLAVDLLANKLLFE  
ALQYS~HFCKYACSEEDPELLDMGG~~PAEGGYSVAFDPLDGSSIVDTNFTVGTIFGVWP

GD~~~~~KLTG~~~~~VTGRDQVAAAMGIY  
GPRTTYVLALKDAPGTHE~~FLL~~~~LDDGKWQHVKETTEIGE~GKLFSP~~GNLRATF  
DNPEYEKLINYY~~~~~VGEKYTLRYTGGMVPDVNQIIVKEKGVFTNVS~~~~SPTTKT  
KLRLLEFEVAPLGLLIEKAGGFSS~DGKQ~SVLSDKVILSTDDRTQVAYGSKNEIIRFEETL  
Y

>H\_ciliata\_YWNF\_2050342

SLARLMVSMGEALRTIAFKVRTA~~~~~SCG~~ATSCVNTFGDE~~QLAVDMLADKLLFE  
ALRHS~HVCKYACSEEEPILQDMKG~~~~~EGFCVAFDPLDGSSIVDTNFTVGTIFGVWP  
GD~~~~~KLTG~~~~~INGRDQAASAMGIY  
GPRTTYVIAIKGFPGTHE~~FLL~~~~MDDGKWTHVKETTEIKE~GKLFSP~~GNLRATF  
DNPEYEKLINYY~~~~~VSEKYTLRYTGGMVPDVNQIIVKERGIFTNVI~~~~SPTTKA  
KLRLLEFEVAPLGLLIENAGGYSS~DGKQ~SVLDRMVVNTDDRTQVAYGSKDEIIRFEETL  
F

>Populus\_trichocarpa\_A9PF94

GLIRVMCMGEALRTIAFKVRTA~~~~~SCG~~GTACVNSFGDE~~QLAVDMLANNLLFE  
ALTHS~HFCKYACSEEVPELQDMGG~~~PVEGGFSVAFDPLDGSSIVDTNFSVGTIFGVWP  
GE~~~~~KLTG~~~~~VTGRDQVAAAMGVY  
GPRTTYVLALKDYPGTHE~~FLL~~~~LDEGKWQHVKETTEVGE~GKLFSP~~GNLRATF  
DNPDIYEKLINYY~~~~~VKEKYTLRYTGGMVPDVNQIIVKEKGVFTNVI~~~~SPTSKA  
KLRLLEFEVAPLGLLVEKAGGYSS~DGHK~SVLDKEIINLDDRTQVAYGSKNEIIRFEETL  
Y

>Tetrahymena\_thermophila\_I7LSW7

SLQKIYIALLDSEFIELADLLRFH~~~~~ACGRKEAGSQNAFGDI~~QLECDTKSDEIIFN  
HLKKT~GEVAYGLSEEQPKLVELGG~~~~~NKYIVTFDPLDGSSIIICNWTVGTIFGIWK  
ND~~~~~EKVLIG~~~~~HKTKDLIASGCCMY  
GPRTTAVIYNEKTKTVNE~~YSLTLNKQKQVEWILSLPNIVIKPQKLFAP~~GNLRAAS  
ENPNYRQCINNW~~~~~IDQGYTLRYTGGMVPDIYQIFIKGSGIFTTIS~~~~SKSHAV  
KLRVLYEVAPLAHLVEMAKGKSS~DGKN~SLMELEVTSYDQRSIIIVGSTEEVDKILSTL  
N

>Arcobacter\_butzleri\_A8EU55

~MQEIMKAIEESAIIKIKHLIETG~~~~~DTG~~KSEFENSTGDT~~QLKLDIASDKIIE  
IFKNI~PSIKAIIVSEEQEAIVNLHE~~~~~NGKYLIAYDPLDGSSLVVDVNLVSVGSIFGIYE  
NE~~~~~FNAQNIVASVYVVF  
GPRVEMVVTT~~~TDVKM~~YRL~~~~~LDGKFTFIQ~NIKLNEKGLNAP~~~GSTQNC  
WAPFHKQLIDDI~~~~~FNDGYRLRYSGGMVPDLHQILLKGGGLFSYPGT~~~SDKPKG  
KLRQLFEVFPFALAYEKAGGQAV~DGFK~RVLEVQTTTHIHDTTPCFFGSNSEINRVLEVY  
K

>Helicobacter\_hepaticus\_Q7VGH7

MISIIIDSLRESALHIDSLKDT~~~~~STS~~YLSINASGDM~~QLEIDVRVDKFLSE  
KLLNL~PCVKAICSEEQEEIMYSEN~~~KNAPYIIAYDPLDGSSLIDSNLSIGTIFGIYN  
EE~~~~~LSAKHLIASGYIIY  
GPRLEMVVAQE~~~QALH~~~YRY~~~~~NGNMWRNLGALALNTKGINAP~~~GGTQKH  
WENKHKAMIESL~~~~~FAQGYRLRYSGGMVPDLHQILLKGGGLFSYPAT~~~SDAPNG  
KLRKLFVFPFVYKAGGFAT~NGTY~RILELEVAHLHDSTPCFFGSQSEMNLVKEVY  
E

>Campylobacter\_curvus\_A7GXH6

DLNEIFETIKSVAKEISEVIKYA~~~~~DLG~~YTTHENATGDT~~QLKLDVQSDEIITA  
KFKAL~SCVKALVSEEKDEILPINT~~~~~NGKFIIAYDPLDGSSLVVDVNFVAVGSIFGIYE  
NE~~~~~LKPQNLIAAAYSIIY  
GPRLELVINDK~~~KGTKPKFYRL~~~~~GKDGNFKVVRE~LELAQKGLNAT~~~GATQKG  
WSKTHRNFINEL~~~~~FDEGYRLRYSGAMVSDLHQILLKGGGLFSYPAT~~~SDHPNG  
KLRLLEFVLPFAFIYENAGGTTS~DGKSDTLFDVNITKTHQTSPCFFGSASEIALLHKFY  
G

>Aeromonas\_salmonicida\_A4SM33

ELTSLSSIRLAAKVVNREINKAGLAD~IIG~~SMGAENVQGEV~~QQKLDVYANERFKA  
ALEARGEVCGIA~SEEEEDFVSFDSELSRHSKYVVLIDPLDGSSNIDVNVSVGTIFSIYR  
RLSA~PGTGVTLDFL~~~~~QPGNRQVAAGYVVY  
GSSTMLVYTTG~~~FGVNG~~FTY~~~DPSIGCFCLSHENIRIPEEGKIYSINEGNYIK~F  
PDGVKKYLKYC~QERDEATHRPYTSRYIGSLVSDFHRNLLKG~GIYIYPSG~~~TNSPNG  
KLRLLYECNPMAFLVEQAGGKAS~DGFG~RIMDIQPTALHQRTPYFVVGSTKMVERAEAFM  
R

>Photobacterium\_profundum\_Q6LV59

DLSSLLGSIKLAIVNREINKAGLVD~ITG~~AIGSENVQGEV~~QQKLDLYANDKFKA

AMEARDQVCGVA~SEEEDEAVTFNKDLNRNAKYVILMDPLDGSSNIDVNVSVGTIFSIYR  
RVSP~IGTTPTQDDFL~QPGNQQVAAGYVIY  
GSSTMLVYTTG~NGIHG~FTY~DPSLGVFCLSHENMQIPEDGQIYSINEGNYIR~F  
PQGVKKYIKFC~QEDVPADNRPYTSRYIGSLVSDFHRNLLKG~GIYMYPST~AMYPNG  
KLRLLYECNPM AFLMEQAGGVAS~DGKN~RILDITPTELHQRVFFVVGSTNMVKQVESFI  
E