

>Arabidopsis-thaliana_AT5G21030.1_ARATH

-----MDTT-----

-----LPPPQ-----HMER-----
-----EPLK-----SKSSLPMTRRGNGSK-GQK-IL-LLT
NHFRVNFRRKPNH-HNFFHYSVTI-----
-----TYE-DGSPLLAKGFGRKILEKVQQT-----QADLGCKHFAYDGDKNLYTVGP-LPR
SSLDFSVVLETAP-----SRRNADKRLKLPHQSKKFNVAI
FAPPEIPMEAIANALQGKTK--HLLDAIRVMDCILSQNAARQ-GCLLVRSFFHNDK
-----YFANIGEGVDCK-----G-----FHSS-----
-----FRTTQGGLSLNIDV-STAMIVKPGPVDFLIA-----NQGVNDPF
SINWKKAKNTLKNLRVKVLPNQE--YKITGLSGLHCKDQT-----F
TWKKRNQNRFEFEE--VEITVSDYFTRIREIELRYSGLLPC--INVGKP-NRPTYFPIEL
CELVSLQRYTKALTKFQRSNLIKESRQN-PQQRIGVLTR-----ALK
TSNYNDPMLQ-ECGVRIGSDFTQVEGRVLPKPKL----AGKE--QDIYPI---NGSWN
FKNK---PATVTRW--AVVNFSARCD-----PQKIIDLTRCGKMKGINVDS-PYHV
-----FEENPQFKDATGSVRVDMFQHLQSILGE-----VPPKFLLCILEKKNSD
V-Y--EKSCSM--WNCECIVPPQNL-----N--D---QYLTLNLLKINAK-----
---LGGLNSVLDMELSGTMP--LVMR--VPTIIIIGMDVSHG---SPGQSDHIPSIAA
VVSSREWPLISKYRACVTRTQSPKVE MIDSLFKPVSDKDD---QGIMRELLDFHSSSGK
K-PNHIIIFR--DGVSESQFNQVLNIELDQM-----MQINHHT
KFFQTES-----PNNVLPGTIISNICHQHNNDYFYLCAHA-----GKIGTT
RPTHYHVLYDEIGFDTDLQELVHLSYVYQRSTTAISLVAPICYAHLAAAQMATAMKFE
-----D-MSETSSSHGGITTAGAVPVPPMPKLNTNV-----
-----AS-----

-----SMF-----FC-----

>Arabidopsis-thaliana_AT5G21150.1_ARATH

-----MDSDEPNG-----SG-----

-----LPPPP-----PFVPANLVP-----
-----EV-EPV---KKNILLPMARPRGSGSGKQK-IP-LLT

NHFGVKFNKPS--GYFFHYSVAI-----
---NYE-DGRPVEAKGIGRILDKVQETY---QSDLGAKYFAYDGEKTLFTVGA-LPS
NKLDVSVVLEEIPSSRNHA-----GNDTNDADRKRSSRRPNQTKKFMVEIS
YA-AKIPMQAIASALQGKETE---NLQDALRVLDIILRQSAARQ-GCLLVRQSFFHNDVK
----NFVPIGGGVSGCR-----G-----FHSS-----
-----FRTTQGGLSLNDT-STTMIVQPGPVDFLLA-----NQNKKDPY
GMDWVKARRVLKLNLRVQITLSNRE---YKISGLSEHSCKDQL-----F
TWRKPNKGEFEE---VEITVLNYYKER-NIEVRYSGDFPC--INVGKP-KRPTYFPIEF
CNLVSQRKSLTNFQRAALVEKSRQK-PPERMASLTK-----GLK
DSNYNADPVLQ-DSGVSITNFTQVEGRILPTPMLK---VGKG--ENLSPI---KGKWN
FMRKTLAEPVTRW--AVVNFARCD-----TNTLIRDLIKGREKGINVEP-PFKDV
-----INENPQFRNAPATVRVENMFEQIKSKLP-----KPPLFLLCILAERKNS
DVYGPWKKKLNLDLGIQTQCI-APTRL-----N--D---QYLTNVLLKINAK-----
---LGGLNSLLAMERSPAMP--KVTQ--VPTIIVGMDVSHG---SPGQ-SDIPSIAA
VVSSRQWPLISKYKACVRTQSRKMEMIDNLFKPVNGKD----EGMFRELLDFYSSSEN
RKPEHIIIFR---DGVSESQFNQVLNIELDQMMQACKFL--DDTWHPKFTVIVAQKNHHT
KFFQSRG-----PDNVPPGTIIDSQICHPRNDFYLCAHA-----GMIGTT
RPTHYHVLYDEIGFATDDLQELVHLSYVYQRSTTAISVVAPVCYAHLAAAQMGTVMKYE
-----E-LSETSSSHGGITTPGAVPVPPMPQLHNNV-----

-----ST-----

-----SMF-----FC-----

>Arabidopsis-thaliana_AT2G27040.1_ARATH

-----MDSTNGNGADLESANGANGSGVT--EA-----

-----LPPPP-----PVIPPVNEPVRVKT-----

---ELA EK-----KGPVRVPMARKGFGTR-GQK-IP-LLT

NHFKVDV--ANLQGHFFHYSVAL-----

---FYD-DGRPVEQKGVGRKILDKVHQTY---HSDLGKEFAYDGEKTLFTYGA-LPS
NKMDVSVVLEEVSATRANG-----N--GSPNGNESPSDGRKRLRRPNRSKNFRVEIS
YA-AKIPLQALANAMRQGESE---NSQEAIRVLDIILRQHAARQ-GCLLVRQSFFHNDPT
----NCEPVGGNILGCR-----G-----FHSS-----

-----FRTTQGGMSLNDV-TTTMIKPGPVDFLIA-----NQNARDPY

SIDWSKAKRTLKLNLRVKVSPSGQE---FKITGLSDKPCREQT-----F

ELKRNPNENGEFET-TEVTVADYFRDTRHIDLQYSADLPC--INVGKP-KRPTYIPLEL

CALVPLQRYTKALTTFQRSALVEKSRQK-PQERMTVLSK-----ALK
VSNYDAEPLLR-SCGISISSNFTQVEGRVLPAPKLL----MGCG--SETFPR---NGRWN
FNNKEFVEPTKIQRW--VVVNF SARCN-----VRQVVDDLKIGGSKGIEIAS-PF-QV
-----FEEGNQFRRAPPMIRVENMFKDIQSKLP-----GVPQFILCVLPDKKNS
DLYGPWKKKNLTEFGIVTQCM-APTRQP-----N--D---QYLTNLLLKINAK-----
---LGGLNSMLSVERTPAFT--VISK---VPTIILGMDVSHG----SPGQ-SDVPSIAA
VVSSREWPLISKYRASVRTQPSKAEMIESLVK----KNGTEDDGIKELLVDFYTSSNK
RKPEHIIIFR---DGVSESQFNQVLNIELDQIEACKLL--DANWNP K FLLVAQKNHHT
KFFQPTS-----PENVPPGTIIDNKICHPKNND FYLCAHA-----GMIGTT
RPTHYHVLYDEIGFSADELQELVHLSYVYQRSTSAISV VAPICYAHLAAAQLGTFMKFE
-----D-QSETSSSHGGITAPGPISVAQLPRLKDNV-----

-----AN-----

-----SMF-----FC-----

>Populus-trichocarpa__POPTR_0008s01100_POPTR

-----MESSDSR-----KD-----

-----LPPPP-----AIIPADVVKTELGP-----

----TCE-----QT-KKA---ATPKRVPMARRGYGAK-GQR-IQ-LLT

NHFKVAV--PKSNDHFYQYSVAL-----

---FYE-DGHPTDGGKIGRKVMDKVQETY---DSELEGQLAYDGEKTLFTTGS-LPH

NKLEFTVVLEDVSLTRGGD-----N--DSSRGN GSPESDQRRKRPHYHSTIKVQIS

YA-TKIPVQAI AAVLQGQESE---HFQEAVRVL DIVLRQNAARQ-GCLLVRQSFHNNPR

----NFVELGGGVMGCR-----G-----FHSS-----

-----FRAAQDGLSLNIDV-STTMIVKPGPVDFLIM-----NQNVRDPY

HIDWTKAKRMLKNLRIKTNHSNTE---YKITGLTEKSCREQT-----F

SLNQRSGRDGDGEVQTIEVTYDYFVNHRNMGLQYSADFPC--INVGKP-KRPSYFPLEL

CNLVSLQRYTKALSSLQRASLVEKSRQK-PQERMRLTD-----ALR

SSNYDADPMLR-SSGISISAQFTQVEGRVLSAPRLK----VGNG--EDFFPR---NGRWN

FNNKLVDPVKIEKW--AIVNF SARCD-----IRYLCNNLIKCGDMKGISISN-PF-EV

-----FEESPQRRESAPVRVERMF EAIKSKLP-----GPPQFLLCILPERKNS

DIYGPWKRKNLSDLGIVTQCI-APT KV-----N--D---QYLTN VLLKINAKVEFCNV

IPFELGGMNSLLSIEHAPSIP--LVSK---LPTLILGMDVSHG----SPGH-SDVPSIAA

VVSSRHWPLISRYRASVRTQSQKVEMIANLFKPVAGTRE---DQGIHRESLLDFYSSSGK

RKPDQIIIFR---DGVSESQFIQVLNIELEQIEACKFL--DENWCPKFMVIVAQKNHHT

KFFQSGS-----PDNVPPGTVIDNKVCHPRNNDFYMCAHA-----GMIGTT
RPTHYHVLHDELGFSADDLQELVHLSYVYQRSTTAISVVAPICYAHLAASQMTQFIKFD

-----D-LSDTSSSHGGVTVPGAVPVPELPR LHNNV-----

-----SS-----

-----SMF-----FC-----

>Populus-trichocarpa__POPTR_0001s22710_POPTR

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-----LPPPP-----PDVPPNVVPVKAEP-----

----EPVK-----KKPLRVPIARRGLGSK-GQK-MP-LLT

NHFKNVNTNTE--GYFFHYCVSL-----

---AYE-DGRPVDGKGVGRKVIDRVHETY---DTEFG-KDFAYDGEKSLFTVGP-LPR

NKLEFTVVLEDVVSNRNNG-----N--ASPDGHGSPNEGDRKRLRRPYHSTFKVEIS

FA-AKIPMQAIALARGQESE--NSQEAFRVLDIILRQHAAKQ-GCLLVRQSFHNDPK

----NFVDLGGGVLGCR-----G-----FHSS----

-----FRTSQGGLSLNIDV-STTMIIQPGPVVDFLIA-----NQNVDPF

SLDWAKAKRMLKNLRVKASPSNQE--YKITGLSEKTCKEQM-----F

QLKQKNGGDGGIEA--VEITVYDYFVNHKIDLRYSGLDPC--INVGKP-KRPTYIPLEL

CSLSLQRYTKALSTLQRSSLVEKSRQK-PQERMTVLSS-----ALK

SSKYDAEPMLR-SCGISINPSFTQVEGRVLPAPKLGK---VGNG--EDFFPR---NGRWN

FNNKKLVEPSRIEKW--AVVNFSARCD-----IRNLVQNLTKCAEMKGIPIED-PF-DV

-----FEENPQSRRAPPVVRVEKMFEQIQSRLP-----GQPKFLLCLLPERKNS

DIYGPWKRKNLAEYGIVTQCI-APQRV-----N--D---QYITNVLLKINAK-----

---LGGLNSMLAVEHAPSLP--LVSK--VPTLILGMDVSHG---SPGQ-SDVPSIAA

VVSSRQWPLISRYRACVRTQSPKLEMIDSLFKRVSETED---EGIIRELLDFYVTS GK

RKPDQIIIFR--DGVSESQFNQVLNIELDQIIEACKFL--DEKWSPTFVVIVAQKNHHT

KFFQPGS-----PDNVPPGTIIDNKVCHPRNNDFYLCAHA-----GMIGTT

RPTHYHVLLEDEGFSADDLQELVHLSYVYQRSTTAISVVAPICYAHLAATQMGQFMKFE

-----D-TSETSSSHGGVTSAGAVPVLPQLPRLOEKV-----

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-----SMF-----FC-----

>Ricinus-communis_29684.t000014_RICCO

-----MDSFEPDGNGLREGNGIHEGNGSQ--EG-----

-----LPPPP-----PVVPPDVVPMRAEP-----
----EPVK-----KKVVRVPIARRGLGSK-GQK-IS-LLT
NHFKVNVNKVD--DYFFHYCVSL-----
---SYE-DGRPVVDGKGVGRKVIDRVHETY---DSEMGKKKFAYDGEKSLFTVGA-LPR
NKLEFTVVLEDVTSNRNNG-----N--ASPDGHGSPNEGDRKRMRRPYQSKTFKVEIS
FA-AKIPMQAIALRGQESE---NSQEAIRVLDIILRQHAQAQ-GCLLVRQNFHNDPK
----NFADVGGGVLGCR-----G-----FHSS-----
-----FRTTQGGLSLNIDV-STTMIIQPGPVVDFLIA-----NQNVRDPF
QLDWAKAKRTLKNLRIKASPSNQE--YKITGLSEMPCKEQT-----F
QLNQKGRDDNDP---LELTVYDYFVNHRRIELRYSGDLPC--INVGKP-KRPTFIPIEL
CSLVSLQRYTKALNTLQRASLVEKSRQK-PQERMSTLSN-----ALK
SSNYDAEPMRLR--SCGVSISTSFVQVDGRQLQAPKLV---VGNG--EDFFPR---NGRWN
FNNKKLVDPKIERW--AVVNFSARCD-----IRNLVRDLTKCAEMKGIPIEP-PF-DV
-----FEENPQFRRAPPTVRVEKMFDSIQSKLP-----GAPKFLCCLPERKNS
DLYGPWKKKNLSDFGIVTQCI-APQRV-----N--D---QYLTNVLLKINAK-----
---LGGLNSMLAVEHSPSIP--LVSK---VPTIIIIGMDVSHG---SPGH-SDVPSIAA
VVSSRQWPLISRYRACVRTQSPKMEMIDSLYKPVSDTED---EGMMRELLDFYSSSGK
RKPEQIIIFR---DGVSESQFNQVLNIELNQIIEACKHL--DEKWNPKFVVIIAQKNHHT
KFFQPGL-----PDNVPPGTVIDNKVCHPRNNDYFYLCAHA-----GMIGTT
RPTHYHVLLDEVGFSADELQELVHLSLYVYQRSTTAISVVAPVCYAHLAATQMGQFMKFE
-----D-ASETSSSHGGVTSAGAVPVPQMPKLSDKV-----

-----SS-----

-----SMF-----FC-----

>HbAGO4_8_9

-----MDSYEPEKNGSQD-----

-----LPPPP-----TVVPPDVVPLQAE-----
-----EPVK-----KKPLRVPIARRGLASK-GQK-IP-LLT
NHFKVNVTVND--GYFFHYSVAL-----
----SYE-DGRPVDGKGVGRKVIDRVQETY----DSELDGKHFAVDGEKSLFTIGS-LPR
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FA-AKIPMQAIALRGQESE---NSQEAIRVLDIILRQHAAKQ-GCLLVRQNFHNDPR
----NFTDVGGGVLGCR-----G-----FHSS-----
-----FRTTQGGLSLNDV-STTMIIQPGPVVDFLIA-----NQNARDPF
QLDWAKAKRTLKNLRIKASPNQE--YKITGLSEKPCREQT-----F
QLKQKGDGEP-----LELTVYEFVNYRHIELRYSADLPC--INVGKP-KRPTYIPIEL
CTLVSLQRYTKALNTLQRASLVEKSRQK-PQERM TTLN-----ALK
SSKYDAEPLMR--SCGISISTSFAQVEGRVLPTRLK----VGNG--EDFFPR---NGRWN
FNNKRLVEPCKIERW--AVVNFSARCD-----VRNFVRDLTRCAEMKGIPIEP-PF-DV
-----FEESPQFRRAPPTVRVEKMFQIQSKLP-----GAPKFLLCLLPERKNS
DIYGPWKKKNLADFGIVTQCS-APQRV-----N--D---QYLTNLLLKINAK-----
---LGGLNSLLAVEHTPSIP--LVSK--VPTIILGMDVSHG---SPGH-SDVPSIAA
VVSSRNWPLISRYRASVRTQSPKVEMIDSLYKRVSDTED---EGMIRELLDFYNSSGK
RKPEQIIIFR---DGVSESQFNQVLNIELDQIEACKFL--DEKWNPKFVVIVAQKNHHT
KFFQPGS-----PDNVPPGKALN-----ELSILL-----NGRGTT
RPTHYHVLLDEVGFSADDLQDLVHSLSYVYQRSTTAISVVAPICYAHLAATQMGSFVKFE
-----E-TSETSSSHGGLTSAGAVPVPQLPRLQDKMRLLSLSKFR
SPTTLSKSWKFILCESLILRIWLLST-----

-----NIL-----FSSNA-----

>Ricinus-communis_29828.t000011_RICCO

-----MEPPEEA-----EA-----

-----LPPPP-----PVVPADVPIQLKP-----
----EPDNVPE-----TT-EKA----IKPKRVPMSRRGNGSR-GQR-IE-LLT
NHFKVGVNCDG--GHFSHYSVAL-----
----FYE-DGRPVDGKIGRVIDKRVRETY----DSDLAGKDFAYDGEKSLFTVGS-LPR
NKMEFTVLLDDVSSNRING-----S--GSPVGNNGSPNGSEKRMKRVFHSKTYKVEIS
FA-AKIPMQAIIAALRGQESE---NSQEAIRVLDIVLRQHAAKQ-GCLLVRQSFHDDSR

-----NYVDLGGVLCR-----G-----FHSS-----
-----FRVSQGGSLNIDG-STTTIIQPGPLIDFLA-----NQHVSTPF
QIDWSKAKRTLKNLRIRVSPTNQE--YRITGLSENLCCKDQI-----F
SMKSKGLNDGNCCDDGMVDITVYEFVNHNRIDLRYSGDLPC--INVGRP-KRPTFFPIEL
CSLLPLQRYTKALSVIQRSKLVESSRQK-PQEKMKILAD-----VMK
SNNYGADPIR-SCGITISSQFTQLEGRVLTAPRLK---VGNG--EDLIPR---NARWT
FNNKKFAEPARIENW--AVVNFSARCD-----IRGLCRDLCRVGENKMGIMISP-PE-HV
-----FEENPQFRHAPPIRVEKMFQIQPRFPD-----NPPRFLLSIFPDRKNS
DIYGPWKRKNLAIEFGIFNQCLCSPNRL-----S--E---MYVTNVLKINAK-----
---LGGLNTFLAVEQSRNVP--FVSK---VPTIIFGMDVSHG---SPGQ-SDVPSIAA
VVSSRNWPLLSRYRASVHSQSPKVEMIDSLFKP----EGKDDDDGIIRELLDFYRSSGQ
TKPAQIIIFR---DGVSESQFNQVLNIELNQIIEACKFL--DESWSPKFTVIVAQKNHHT
KFFQLRS-----AENVPPGTVVDNGVCHPQSNDFYMCAHA-----GMIGTT
RPTHYHVLLDEIGFSADDLQELIHSLSYVYQRSTSAVSVVAPVRYAHLAATQIRLFMKFE
-----D-MSETSSSHGGLTTSGPTVPPELVLHQQV-----

-----RS-----

-----SMF-----FC-----

>Populus-trichocarpa__POPTR_0006s02680_POPTR

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-----LPPPP-----PEIPPNVVPVQLTT-----

-----DSVPE-----ET-KKI---SKPKRSPIARRGFGSR-GQK-IQ-LLS

NHFKVSI--SNTGGHFFHYCVSL-----

---SYE-DGRPIDAKGIGRRLIDKVHETY---GSDLAGKDFAYDGEKSLFTIGA-LPR

NKMEFTVLLDSFSSNRNSG-----N--GSPVGNPNETDKRMRRRAFQSKTFKVEMS

FA-AKIPMQAIAAALRGQESE---NSQEALRVLDIILRQHAAKQ-GCLLVRQSFHDDPK

-----NYVDLGGVLCR-----G-----FHSS-----

-----FRVSQGGSLNIDG-STTTIIQPGPLIDFLIA-----NQNVSMPF

QIDWAKAKRTLKNLRIRVSPTNQE--YRITGLSENTCKEQM-----F

SLKSRASDGNDES--VDITVYHYFVNHRSIDLRYSGDLPC--INVGKP-KRPTYIPVEL

CSLLPLQRYIKALTVLQRSQVLEKSRQK-PQEKIRILTD-----VMK

SNNYAAEQMLR-SCGITISSQFTQVQGRVLTAPKLK---AGNG--EDVIPR---NGRWN

FNHKKFFEPSKIENW--AVVNFSARCD-----VRGLVRDLIRFGEMKILISD-PV-DV

-----VEENGQFRRAPPLVRVEKMFQIQKAFPN-----APPRFLVCLLPDRKNS

DIYGPWKRKNLAEYGFNQCL-APTRV-----N--E---QYILNVLLKINAK-----
---LGGLNSLLAMEQSRNIP--FVSK---VPTIIFGMDVSHG---SPGQ-SDMPSIAA
VVSSRNWPLLSRYRASVRSQSPKMEMVDSLFTLTPDKKD---DSGIVRELLLDYRSSGQ
TKPAQIIIFR---DGVSESQFNQVLNIELDQIIEACKFL--DESWSPKFTVIVAQKNHHT
KFFQDGS-----PDNVPPGTVIDNAVCHPQSYDFYMCAHA-----GMIGTT
RPTHYHVLLDEIGFSADDLQELIHSLSYVYQRSTTAISVVAPVRYAHLAATQISQFLKCD
-----D-MSETSSSHGGLTSAGQTPPELPELHRNV-----

-----CS-----

-----SMF-----FC-----

>Populus-trichocarpa__POPTR_0016s02480_POPTR

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-----LPPPP-----PEIPPNVVPVQLTT-----

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FA-AKIPMQAIAAALRGQESE---NSQALRVLDIILRQHAQK-GCLLVRQSFHNNPK

----NYVDLGGGVLCR-----G-----FHSS----

-----FRALQGGLSLNMDG-STTTIIQPGLIDFLIA-----NQNVS NPF

QIDWAKAKRTMKNLRIKVSPTNQE--YRITGLSENSCKEQM-----F

SLKSRAADGNDVES--FDITVYDYFVNHRSIDLRYSGDLPC--INVGKP-KRPTYIPVEL

CSLLSLQRYTKALTVHQRSQVLVEKSRQK-PQEKIRILAD-----VMK

SNNYAAEPMRL-SCGITISSQFTQVQGRVLPAPKLV---AGNG--EDVIPR---NGRWN

FNNKFFEPSKIENW--AVVNFSARCD-----VRGLVRDLIKFGEMKILISD-PM-DV

-----LEENAQFRRAPPVVRVDMFEQIQTAFPD-----APPRFLVCLLPDRKNS

DIYGPWKRKNLAEYGFNQCL-APTRV-----N--D---QYILNVLLKINAK-----

---LGGLNSLLAMEQSRNIP--FVSK---VPTIIFGMDVSHG---SPGQ-SDIPSIAA

VVSSRNWPLLSRYRASVRSQSPKMEMVDSLFLKLTADKKD---DCGIVRELLLDYKSSGQ

TKPAQIIIFR---DGVSESQFNQVLNIELDQIIEACKFL--DESWSPKFTVIVAQKNHHT

KFFQDGS-----PDNVPPGTVIDNAVCHPQTYDFYMCAHA-----GMIGTT

RPTHYHVLLDEIGFSADDLQELIHSLSYVYQRSTTAISLVAPVRYAHLAATQISQFLKFD

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-----RS-----

-----SMF-----FC-----

>HbAGO6.1

-----MEEAGG-----

-----SCP KP-----

-----TKRSIARPGFGSS-GHP-MP-LLS

NHFKVSNNVTD--VVFYQYSVSI-----

---TAE-DNRVV---DEKRKIIDRLCQTY---SCELAGKSFAYDGEKTLVSLVR-LPQ

SWMEFTVVPKESIAKRYVNFSTSMICVCNADGGR--SFAVTCERSKRRLRSETFKVEIV

YA-AKIPLNSLALSFHGNETN--NNTRDALRVLDLTKNRQSR-----GVLMPRTPP

---ARTPADGILRPIS-----PDANIISIFVRG----

-----VAHLQSRPKSNLQV-AESLMKRDAIFISVLRPELGC-----

---MAESVLETELVKPRHRNKE---YKIIGLSQKVCKEQY-----F

SMKVRSHDCANGEPQVVKITVYEFYFTKHCGIELTDSACLPC--LDVGNT-KQPIYLP IEL

CTLVPLQRYAKALFPTLRASLVASSRQN-PQDRKRTVID-----AVR

NYRCDDDSL SLS-ASGVSIERQMMQVDSRVLETPTLR---VGNK--EDVFPR---NGRWN

FNYKTLFKTTCIDRW--AVVNFSAPCY-----TDKIFHDLISCGRRMGIQIES-PRTP I

-----WEDPKSRGDKPLDRVENMFEMLNRAKLL-----KDTQFILCVLPEKKS D

I-YGPWKKKCLCDFGIVTQCI-YPSTI-----N--D---RYLTNVLLKINSK-----

---LGGINSLLAIEDSMKIP--LIKD---TPTMILGMGVSLG---FPGR-SDIPSVAA

VVGSLYWPHISRYRASVRAQSPKEEMIDALYNPLANGKD---DGMMRKLEDFCHTSNG

NKPKHIIVFR---NGVASHSSLMNFL-----VLQAYQDHFKSEVDIPKFTVIVAQKDRHT

KLFQDIS-----PENVPSGTVVDTEIVHPRNYDFYLCAHA-----SMTGTS

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-----DNLSEISSGQG-----PVPELPR LHKNV-----

-----AS-----

-----SMF-----FC-----

>HbAGO6.2

-----MEEAGG-----

-----SCPKP-----
-----TKRSIIGRPGFGSS-GHP-MQ-LLS
NHFKVSVNVTD--VVFYQYSVSI-----
----TAE-DNRVV--DEKRKIIDRLCQTY----LYELSGKSFAYDGEKILYSLVR-LPQ
SWMEFTVVLEESIAKRYVNFSTSMICVLDCNADGGGSFAATCKRSKRGLRSETFKVEIV
YA-AKIPLNSIALSLQRNETN--NNTQDALRVLDTILKNRQR--GCLL-----SEEAK
----NFTDGGGGITGVR-----G-----YHSS-----
-----FRTTQGGLSLMDV-STTMFLTPGPVIDFLKA-----NQNVQDPC
YIDWVKAKIMLKNLRIKPRHRDME--YKIIIGLSQKVCKEQY-----F
SMKVRSHDCANVKPQVVKITVVEYFTKHRGIELTDSACLPC--LDVGNT-KQPIYLP
CSLVPLQRCTKALSPTLRASLVANSRQN-PQDRKRTVID-----AVR
NYRCDDDSLSS-ASDVSIERQMMQVDGRVLGTPMLR----VGNK--EDFLPT---NGRWN
FNYKTLFKTTCIDRW--VVVNFSSRCY-----NDKICHDFISCGRRMGIQIKS-PRTP
-----WEDPQSRGDKPLDRVENMFEMLNRAKLL-----KDIQFILCVLPEKSD
V-YGPWKKKCLSDCGIVTQCI-YPSTI-----N--D---QYLSNVLLKINSK-----
---LGGINSLLAIEDSIQIP--LIKD---TPTMILGMGVSLG---SPGP-SDKPSLAA
VVGSLYWPHISRYSRASVRAQSPKEVMIDALYNPLANGK---DGMMRELLEDFCHTSNG
IKPKHIIIVFR---NGVAESQFSKVLNVEVEQILKAYQDLFKSEVDVPKFIVIVAQKDHHT
KLFQDIS-----PENVPSGTVVDTKIVHPRNYDFYLCAHA-----SMIGTS
RPAHYHVLLDEIGFSPDELQNLIHALSYSVSRSTTAIRIVAPLRYANLAARQMGQFMKFE
-----DNLSKICSGQG-----PVPKLPRLHKNV-----
-----AS-----

-----SMF-----FC-----

>Arabidopsis-thaliana_AT2G32940.1_ARATH

-----METSSS-----

-----LPLSP-----ISIEPEQP-----
-----SHRDYDITTRRGVGTG-GNP-IE-LCT

NHFNVSVRQPD--VVFYQYTVSI-----
---TTE-NGDAVDGTGISRKLMDQLFKTY---SSDLGKRLAYDGEKTLTYVGP-LPQ
NEFDLVLIVEGSFSKRDG-----VSDGGSSSGTCKRSKRSFLPRSYKVQIH
YA-AEIPLKTVLGTQRGAYTP-DKSAQDALRVLDIVLRQQAER-GCLLVRQAFFHSDGH
-----PMKVGGGVIGIR-----G-----LHSS-----
-----FRPTHGGLSLNIDV-STTMILEPGPVIEFLKA-----NQSVETPR
QIDWIKAAKMLKHMVRKATHRNME---FKIIGLSSKPCNQQL-----F
SMKIKDGEREVPPI---REITVYDYFKQTYTEPISSA-YFPC--LDVGKP-DRPNYLPLEF
CNLVSQRYTKPLSGRQRVLLVESSRQK-PLERIKTLND-----AMH
TYCYDKDPFLA-GCGISIEKEMTQVEGRVLKPPMLK---FGKN--EDFQPC---NGRWN
FNNKMILLEPRAIKSW--AIVNFSFPCD-----SSHISRELISCGMRKGIEIDR-PF-AL
-----VEEDPQYKKAGPVERVEKMIATMMLKFP-----DPPHFILCILPERKTS
DIYGPWKKICLTEEGIHTQCI-CPIKI-----S--D---QYLTNVLLKINSK-----
---LGGINLLGIEYSYNIP--LINK---IPTLILGMDVSHG---PPGR-ADVPSVAA
VVGSKCWPLISRYRAAVRTQSPRELMIDSLFQPIENTEKG--DNGIMNELFVEFYRTSRA
RKPKQIIIFR---DGVSESQFEQVLKIEVDQIIKAYQRL--GESDVPKFTVIVAQKNHHT
KLFQAKG-----PENVPAGTVVDTKIVHPTNYDFYMCAHA-----GKIGTS
RPAHYHVLLDEIGFSPDDLQNLHLSYVNQRSTTATSIVAPVRYAHLAAAQVAQFTKFE
-----G-ISEDGK-----VPELRLHENV-----
-----EG-----

-----NMF-----FC-----

>Populus-trichocarpa__POPTR_0014s15760_POPTR

-----MISRRGVGTS-GRH-IS-LLT
NHFKVSVNVPD--AVFYQYNVSI-----
---TSE-DNRAVESKIGRKLIDRLYQTY---SSEFAGKRFAYDGEKSLTYVGP-LPQ
NKSEFTVVLLEESFAKHESG-----SPGGGESPPAA-VKRSKRSYRSKTFKVETS
YA-AKIPLKSIALALKGIEID--NSTQDALRVLDIILRQQAANR-GCLLVRQSFHDDSR
---NFNDVGGGVTVGVK-----G-----FHSS-----
-----FRTTQGGLSLMDV-STTMILTPGPVIDFLIV-----NQNVREPR
YVDWVKARRMLKLNLRVTKHNNME---FKIIGLSEKPCNQY-----F
PMKLNKRDGANVEAQIVEVTYDYFTKHCIGLQGYSAYLPC--LDVGKP-KRPNYLPLEL

RLLPD---RAASDQ--KGNVVPGTVVDSGITAPDGFDFYLNASHA-----GLQGTN
KPAHYHVLVDEIGFGADGIQLLTYWLCYLYQRTTKSVSYCPPAYYADRAAFRGRRTLLAAS
SSASDSAS-----E-TASRSGRGAGAAEGGASAPPTFAGIHRNL-----

-----TN-----

-----VLY-----FM-----

>Arabidopsis-thaliana_AT1G31280.1_ARATH

-----MER

GGYRGGRGDGRGRGGRGYGGGGGGGEQGRDRGYGGGEQGRGRGSEGGGNRQQGRG----

-----EQQDFRSQSQRGPPPGH

GGRGTTQFQ-----QPRPQVAPQPSQAPASYAGSVGGVAGRG-----

-----AWGRK-----PQVPSDSASPSTST-----

-TVVSEPVRAEVMNL-----KPSVQVATSDRKEPMKRPDRGGVVAVR-RVNLYV

NHYKVNFN-PE--SVIRHYDVEI-----

---KGEIPTK----KVSREFELAMVRDKVFTDNPDEFPLAMTAYDGQKNIFSAVE-LPT

GSYKVEY-----PKTEEMRGRSYFTIK

QV-NVLKLGDLKEYMTGRSSF--NPRDVLQGMMDVVMKEHPSK--CMITVGKSFFTRETE

----PDEDFRFGVIAAK-----G-----YRHT----

-----LKPTAQLSLCLDY-SVLAFRKAMSVIEYLKLYFNW-----SDMR

QFRRRDVEEELIGLKVTNHRKNKQK-LTIVGLSMQNTKDIK-----F

DLIDQEGNEPP----RKTSIVEYFRIKYGRHIVHK-DIPC--LDLGKN-GRQNFVPMEF

CDLVEGQIYPKDNLDKDSALWLKLSLVNPQQRQNRNIDK-----MIK

ARNGPSGGEIIGNFGLKVDTNMTPVEGRVLKAPSLKLAE-RGRV--VREEPNPRQNNQWN

LMKKGVTRGSIVKHW--AVLDFTASER--FNKMPNDFVDNLIDRCWRLGMQMEA-PIVYK

-----TSRMETL---SNGNAIEELLRSVIDEASRKHG---GARPTLVLCAMSRKDDG

--YKTLKWIAETKGLVTQCF-LTGPKTG--G--D---QYRANLALKMNAK-----

---VGGSNVELMDTFSF----FKKE---DEVMFIGADVNHV----AARD-KMSPSIVA

VVGTLNWPEANRYAARVIAQPHRKEEIQGF-----GDACLELVKAHVQATGK

R-PNKIVIFR--DGVSDAQFDMVLNVELLDVKLTFEKN---GYNPKITVIVAQKRHQT

RFFPATNNDGSD----KGNVPSGTVVDTKVIHPYEDFYLCSSH-----GGIGTS

KPTHYYTLWDELGFTSDQVQKLIFEMCFTTRCTKPVSLVPPVYADMVAFRGRMYHEAS

-SREKNFKQPR-----G-ASTSAASLASSLSLTIEDKAIFKLHAEL-----

-----EN-----

-----VMF-----FV-----

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GRGDGHGRGGGGDRGRGYSGRGRGFVQDRDGGWVNPQSSGGHVRGRGTQLQQPPPQEV
PSSSQAQVS-----QGVAPGDVGGGGVDVGRDGVGDVGRDGVGDVGGGV
GDVGQVGVGDVGGGGVDVGGGGVDVGRDGVGDVGRDGVGDVGRGGVGDVGRGQSSQSLSS
GHFGRGTQLQQQP-----QAVSQSSSQQVSQSFATGGVGLGAWARKPQLFSDS
TVLPSSSSSNVVASHTASGSQVMTP-KPS----SSDKKEPVKRPDKGGNIKVKGVINLSV
NHFRVSFS-TE--SVIRHYDVDI-----
---KGENSSK----KISRFEAMVKEKL-FKDNNDFPNAMTAYDGQKNIFSAVE-LPT
GSFKVDFSETE-----EIMRGRSYTFIIK
QV-KELKLLDLQAYIDGRSTF---IPRDVLQGM DVVMKEHPSK--RMITVGKRFFSTRLE
-----IDFGYGVGAAK-----G-----FHHT-----
-----LKPTVQGLSLCLNS-SLLAFRKAISVIEYLKLYFG-----WRNIRQFK
NCRPDDVVQELIGLKVTVDHRKTKQK-FIIMGLSKDDTKDIK-----F
DFIDHAGNQPP----RKISIVEYFKEKYGRDIDHK-DIPC--LNLGKK-GRENFVPMF
CNLVEGQIFPKEKLYRDSAALWELSLVTPQQRLNINK-----MIK
SSDGPRGGDIIGNFGLRVDPNMTTVEGRVLEAPTLKLTDRRGNPIHEKLMSE---SNQWN
LTTKGVTKGSIKHW--AVLDFTASES-LKKKMPGYFVNKLIERCKGLGMQMEA-PIVCK
-----TSSMETL---YDGNALEELLRSVIDEASHNHG---GACPTLVLCAMTGKHDG
--YKTLKWAIAETKGLVTQCF-LTISAIKGETVS--D---QYLANLALKINAK-----
---VGGTNVELVDNIFSF---FKKE---DKVMFIGADVNHPP---AAHD-NMSPSIVA
VVGTLNWPEANRYAARVKAQSHRKEEIQGF-----GETCWELIEAHSQAPEK
R-PNKIVIFR---DGVSDGQFDMVLNVELQNVKDVFAKV---GYNPQITVIVAQKRHQ
RFFPATTSKDGRA---KGNVPSGTVVDTTIIHPFEYDFYLC SQH-----GAIGTS
KPTHYYVLSDEIGFNSNQIQLIFDLCTFTRCTKPVAVPPVSYADKAASRGRVYVEAS
-LMKKNSKQSR-----G-ASSSSASVASSSSVTMEDKEIFKVHAGI-----
-----EN-----

-----FMF-----FV-----

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SPPRREEPPPPPPVVP--TEGGPSQQQREGYSHRGRGDRGRGGSGGVGKQQWIPTTQG

RGGAQGRGGAQGRGGSAWLTR--GASSSGGGGGGERGGSTSTRGRG--PT-----

-----TPAPP-----HTVPRRSDVPESEP-----
----TLSGTSIRPVNISEHLASPS-SPSD---TTTRVVPVKRPDKGGTLAIR-TASLRV
NHFPVRFN-PE--SIIRHYDIDV-----
---KPVVPPKNGRAVKISKSDLTVIRNKLFTDDSSQFPLSMTAYDGEKNIFSAVP-LPT
GKIKVEFS-----EGED-----MKDRAYTFNIK
LV-NELKCLKLDYLTGKLFs---IPRDILQGM DVVMKENPAR--HMVSVGRSFHSTEAY
----KEDLGFGITASR-----G-----FQHS----
-----LKPTFQGLAMCLDY-SVLAFKRRLPVIDFLREHV-----PGFNLNDF
RSCGRDVENALKGLKVTVTHRITKQK-YTIAGLTKDNARYLS-----F
FSEDPNSKAPP----RKVILVEYFRQKYQ-DIQFK-DIPC--LDLGTN-NRKNYVPMEF
CVLVEGQIYPKENLNRDVGLYLKISLATPRDRQRIICD-----MVA
DRDGPCGGNIIQNFMEVDMDMTSVLGRVIGPPELKLASNGRV--IKIAVD-KEKCHWN
LVGKGVVEGKPIDRW--VVIDFSSSERGRYKLRPEQFIPKLRARCENLGISMKE-PLFCH
-----PANMHKF---SSADLLRDLEVVNDRAYKICR---GQLQIICVMSRKDSG
--YKYLKVVSETRVGVVTQCC-LSDHVNNG---N--D---QYFANLALKINAK-----
---LGGSNVELIDRLPF----FEGE---GHVMFIGADV NHP---GARN-KTSPSIAA
VVATVNWPAANRYAARVRPQYHRKEKILNF-----GDMCFELVETYVRLNRV
K-PGNIVIFR--DGVSEGOQFDMVLNEELDLRRAFKSS---NYAPTITLIVAQKRHQ
RLFPGNRSSGSS----NGNVSPGTVDTKIVHPFEFDYLC SHYGLGTSNHYGLGTS
KPTHYHVLWDEHGFSSDQLKLIYNMCYTFARCTKPVSLVPPVYADLVAYRGRLYEAI
-M--DGQSPAS-----A-SSSTSSAATSSLSSAASLDRFYKLHAEL-----

-----EN-----

-----IMF-----

-----FV-----

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NHFPVKFS-PK--SIIRHYDIDI-----

---KQEVPPKHGRPGKISKILT MIRDKLFTDDPSRFPLGKTAYDREKNIFSAVP-LPT

GTFRVEVS-----EAEDAK-----PRSYLFTIK

LV-NELQLRKLKDYLDGTLRS--VPRDILQGM DVVVKEHPAR--TMISVGRGFH SVRAH

-----QDYLGYGIIASK-----G-----CQHS-----
-----LKPTSQGLALCLDY-SVLSFHEPVSVIDFLTKHI-----CGFNLNNF
RRCRGDVEIALKGLKVRVTHRVTQKQ-YVIVGLTRDDTRDIT-----F
SQEDPDGKAS-----QNVRLVDYFRQKYGRDIVHQ-DIPC--LEM-KS-NMRNYVPMY
CVLVEGQVFPKEHLQRDEAQMMLKDISLAKAKDRQKTICS-----MVR
DGDGPFGEIIRNFGMEVSDMTPVVGVRVIGPELKLGPNGRV--MKV-PV-DEKCQWN
LVGKGVVEGKPIERW--AVLDFSSDDY-QCPLNADHFIPKLIARCLKLGIRMEE-PLFYE
-----PTSMRLF-SNSNVDRLRELLERVNGRARKISR---GQLQFLLCVMSKKDPG
--YKYLKWICETKVGIVTQCC-LSRSANKV--N--D---QYLANIGLKINAK-----
---LGGSNAELSDRLPY----FGDE---NHIMFIGADVNHPP---AARN-TTSPSIAA
VVGTTNWPAAANRYAARVRPQDHRCEKILNF-----GDMCLELVEFYSRLNKA
K-PEKIVIFR---DGVSEGQFDMVLNDELMDIKRAFRSI---MYTPTITLIVAQKRHQ
RLFLEDGGR-----IGNVSPGTVVDTKIVHPFEYDFYLC SHY-----GSLGTS
KPTHYHVLWDEHGLSSDQLQKLIYDMCFTFARCTKPVSLVPPVYADLVAYRGRLYHEAV
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-----SS-----

-----TVH-----SS-----

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-----QQLDT-----LNSYVGNINGISS-----
-----LFFAGPNVPK-----GL-ASV---TANRISPVLRPDKGGKLAVR-TPRLLV
NHFLVKFN-PK--SIIRHYDVNI-----
---KQEVLPKHGRPGKISKSNLAMIRDKLFADDPSSFPRAMTAYDGEKNIFSAVS-LPT
GTFKVQVSE-----AEDA-----KPRSYLFTIK
LV-NELELHKLKDYLDGKLS--TPRDILQGMDVVVKEHPAR--TMISVSRSFHSVRDH
-----QIHLGHGIIASR-----G-----CQHS-----
-----LKPTSQGIALCLDY-SVLSFHEPLSVIEFLTKHI-----SGFNLNNF
RSFRRAVEGVLKGLKVRVTHRVTQKQ-YVITGLTRDDAQYIT-----F
PQEDPDGKAS-----QNVRLVEYFRQKYHRDIVHQ-DIPC--LEM-KS-KMKNYVPMY
CVLVEGQVFPKEYLKETEAQMLKFKSLANPKDRQKTICR-----MVQ
DGDGPCSGEIIRNFGIEVSKNMTSLIGRAL-----DGRV--IKIPVD-KEKCQWN
LVGKGV-----LIARCQSLGIRMEE-PL---
-----FYQPTSMRKFNSVDVLRQLETVNERAHKSCG---GQLQFLLCVMSRKDPG

--YKYLKWISETKVGIVTQCC-LSTPANEG---K--D---QYLANLGLKINAK-----
---LGGSNAELSGRLPY----FGNE---NRVMFIGADVNHPP---GAQN-KTSPSIAA
VVGTTINWPAANRYAARVRPQYHRKEQILNF-----GDMCLELVEYCYSRLNKA
K-PEKIVIFR---DGVSEGGQFDMVLNEELTDIMKAFKSI---NYTPTITLIVAQKRHQT
RLFPGDEGS-----TGNVSPGTVVDTTIVHPFEYDFYLCSHY-----GSLGTS
KPTHYYVLWDEHGLSSDDLQRLIYNLCFTFARCTKPVSLVPPVYADLVAYRGRLYHE--
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>Ricinus-communis_30093.t000002_RICCO

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GGDGAGR-----GGGGAGGRFSGSSGRGRRGSSRGSA-----

-----SSQDI-----AAINPEHTVQQMQP-----
-----LNLSRQDNSSGKNNIR-TISLRV

NHFLLSFD-PE--SIIRHYDFSI-----
---KPDVPARNSLPMKVPKTIILSMIRNKLFSDDPTRFPLSMTVYDGEKNIFSTVS-LPT
GKFKVELS-----KNEGIR-----IRSFMVQL
LV-NELKCDKLNLYLGRVVS---VPREVLQALDVVMKENPMR--QMIYAGRIFHPIMPY
---PGDDLRRGITASR-----G-----IKHT-----
-----LKPTSQGLALCLDY-SVLPLLKQMPVIDFLKEHI-----RGFNLNNF
RAFREVERVLKELKVTVNHRTTGQK-FKIAGLTHDDTQDIS-----F
EVDRISE-----RKVWLVDYFKEKYNKNITHR-NIPC--LDLGKK-NRTNYVPMEF
CSIAKQRFAMEDLDRNQSEKLRRISLASPKSREGMICD-----MIQ
SSDGPCGGDISQNFQIGTDLNMTKVTGRVLAPPELKLGNSSGGRP--TAVDRD--KCHWN
LFKKSVVHSPKIRLW--GVLNFGSNDL-----EKFIPELISNSEKLGIMDE-PLFCL

-----HHPMNL---HNVNQLQLLESVNNQCYKRNG---GEYLQILVCVLPKEDPG
--YSNLKWICETKVGIVTQCC-LENAFRP---K--A---QFLANLALKINAK-----
---LGGSNVELFKQPQC---LQSK---GHVMFIGADVNHPP---SSYN-STSPSIAA
VVATMNWPAANQYGALICPDHRAEKILF-----GDMCLELVNAYARLNQV
R-PENIVVFR---DGVSESQFDMVLNEELDKIAAFESL---EYFPTITLIVAQKRHTT
RLFLDSDE-----DENVPPGTVVDTVITSPSGSDIYLCSHF-----GQIGTS
KPAHYQVLQNEIEFTPNEIQEFIYSICFTSAQCTKPVSLVPPVIYADRAAFRGRLYNAM
-----E-LHQPSAPSTSSSSSLASFDEQPF-RLHPNL-----
-----EN-----

-----SMF-----YI-----

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-----MSDQSFNVVDRARQIEISYTVDNSGRAKKNRAEGSSGVPYMATM
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SGPCMMGSGRYSAGRGRGTGGGRSGEDGGRGRGRGRGRGRGGDHQHRSRHQQQILVP
QGGGRTQTQWQSSPGQGGGRGSLVGPARGGHGGIGGAGGGRGDWGPAGGRF-----

-----QGPSS-----SAVPVHSRIEQQES-----
----SCEKLSAMQSI-----KI-STSSPLEVAGKLVPIKRPDHGGKNDIG-GRRLCV
NHFLNLYN-SG--GIIRHYDVDV-----
---KPDLPKKNVQAMKVPKAVLSLIRNKLFSDDPKFPMSTAYDGEKNIFSAVP-LPT
GTFKVELS-----NEEGMN-----IRHFTVAVQ
LV-NELKCTKLDDYISGKCLS---IPRDVLQALDVVMKENPAR--QMIYACRSFHPTRPD
----PRDDLGHGITVSR-----G-----IKYS----
-----LKPTAQLALCLDY-SVFPFCKQIPVIDFLKEQI-----PEFNPNNF
TRFRKQVETVLKGLKVTVTHRTTNQK-YKIAGLSIDENTQDIS-----F
DIENPNDQTPL----RKVSVVSYYKEKYNKDIMHK-NIPS--LDLGKKSNRKNYVPMEF
CMIAGGQRYAKELLDKKLSENLRKISLASPKVRENKIYD-----MVH
DRDGPSCGDITQNFQIGVDVQMTRVTGRVIEPPELKLRTSNGRW--TMATLD-RVKCDWN
LRRNSVISSKPIRLW--GVLDFGSFS-----IEKAIPELISRERLGIHMGQ-PLFYK
-----RLQMNLly--DVDNLHQLLESINSESYKIGG----THLQILVCVMPREDPG
--YNNLKRISSETKVGILTQCC-LTKNCNRA--NK-D---QFLANIAIKINAK-----
---LGGSNVELSKQPQC----LQSK---GHVMFVGADVNHP---GSYN-LTSPSIAA
VVGTMNWPAAANQYIARICPQYHRVEKILF-----GGMCLELVNTYNRLNQA
R-PEKIVLFR---DGVSDGQFDMVLNEELMDLKMTEAL----NYFPTITVVVAQKRHMT
RLFVVGDM-----DENVPPGIVVDTKITHPFGDFYLCSHY-----GHIGTS
KPAHYHVLWDENGFTSDELQELIYSMCFCTCAQCTKPVSLVPPVWYADRAAYRGRLYHDSI
EWYQP-----S-ASPSSSSPPSRSTTSFDEQLYKLHPNL-----
-----EN-----

-----SMF-----FI-----

>Arabidopsis-thaliana_AT1G69440.1_ARATH

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Y-----CYFYVSQFHNSLPPPPPP
HLLP-----LSPPLPPLPLPPPMSMTRFHKSL-----
-----PVS-----QVVERKQQHQKKK-----
-----IQVSNKVS-----GS-IAI-----EAAALVAKRPFDFGGQDGSV-IY-LLA
NHFLVKFD-SS-QRIYHYNVEI-----
---SPQ-PSK---EIARMIKQKLVETD---RNSFSGVVPAFDGRQNIYSPVE-FQG
DRLEFFVNLPIPSCKAVMN-----YGD-LREKQPQKKIEKLFVNMK
LV-SKFDGKEQRK--EGE--DWAPLPPEYIHALDVILRENPM--KCTSIGRSFYSSSMG
-----GSKEIGGGAVGLR-----G-----FFQS-----
-----LRHTQQGLALNMDL-SITAFHESIGVIAYLQKRLEFLDLPKNGRELS
LEEKREVEKALKNIRVFCHEQVQR-YRVYGLTEEITENIW-----F
PDREG-----KYLRLMSYFKDHYGYEQFK-NLPC--LQISR--ARPCYLPMEL
CMICEGQKFLGKLSDDQAAKIMKMGKQK-PNERKAIIDK-----VMT
GSVGPSSGNQTREFNLEVSREMTLLKGRILQPPK---LDRP-----RN
LKESKVFKGTRIERW--ALMSIGGSSD--QKSTIPKFINELTQKCEHLGVFLSKNLSST
-----FF-EPHI-LNNISLLESKLEIQRAS-----NNLQLIICVMEKHKHG
--YGD-LKRISETRIGVVTQCC-LYPNITKL---S--S---QFVSNLALKINAK-----
---IGGSMTELYNSIPSHIPRLLRPD---EPVIFMGADVTHP---HPFD-DCSPSVAA
VVGSIWPEANRYVSRMRSQTHRQEIIDL-----DLMVKELLDDFYKAVKK
L-PNRHIFFR---DGVSETQFKKVLQEELQSIKTACSKF---QDYNPSITFAVVQKRHHT
RLFRCDPD-----HENIPPGTVVDVITHPKEDFYLCSHL-----GVKGTS
RPTHYHILWDENEFTSDELQLRVYNLCYTFRCTKPIVPPAYAHAAAYRGRLYIERS
-S-----E-SNGGSMNPSSVSRVGGPKTIPLPKLSDNV-----
-----KN-----
-----LMF-----YC-----

>Populus-trichocarpa__POPTR_0010s17100_POPTR

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LQLA-----LTPPLPQNHFSFKTQLKPLCKLNNPP-----
-----PPPPS-----PAPPTSSDTKGPAV-----
-----TTSPAFEGLLQQKNRPLKGDGGRKVMASATQSLVVARRPDSSGGVEGSV-IT-LLA

NHFPVQFD-SS--QRIFHYNVEI-----
---SPN-PSR----EVARMIKQKLVKEN---SAVLSGALPAYDGRKSLYSPVE-FQK
DRLEFYVSLPIPTTKSSL-----PFGEFNFLQEKHQQLKLFRLNIK
LV-SKLDGKELSRYSKEGDDWIPLPQDYLHALDVVLRSPME--RCLPVGRSLYSSSMG
----GTKEIGGGAVALR-----G-----FFQS-----
-----LRPTQQGLALNVDF-SVTAFHESIGVIPYLQKRLEFLRDLQPQRKRSV
GEERKEVEKALKNIRIFVCHRETVQR-YRVFGLTEEATENLW-----F
SDRDG-----KNLRLNLYFKDHYNYDIQFR-NLPC--LQISR--SKPCYLPME
CMICEGQKFLGKLSDDQTARILKMGQR-PKERKAIIDG-----VMR
GSVGPTSGSQGREFKLHISREMTSLGRILQPPKRLRGD-GGHV--RDLIPS-RHDCQWN
LLDSHVFEQTRIQRW--ALISFGGTL--QKSSIPKFINQLSQRCEQLGIFLNKNTMIKP
-----QY-EPTQV-LNNVSLLESKLLKIHAAS-----NNLQLLICVMEKKHKG
--YADLKRIAETSVGVVTTQCC-LYLNGLK---S--S---QFLANLALKINAK-----
---VGGCTVALYNSLPSQIPRLLRSN---EPVIFMGADVTHP---HPLD-DISPSVAA
VVGSMNWPAANKYVSRMRSQTHRQEIIQDL-----GEMVKELDDFYQELNE
L-PKRIIFR---DGVSETQFYKVLKEELQAIRESRF---PGYRPPITFAVVQKRHHT
RLFPNETDPSSTQNFSDENIPPGTVVDTVITHPREDFYLCSHW-----GVKGT
RPTHYHVLWDENQFTSDELQKLVYNLCYTFVRCTKPVSLVPPAYAHLAAYRGRYLERS
-----E-CMASIRNASTISRAAPPKAAPLPKLSENL-----
-----KK-----

-----LMF-----YC-----

>Ricinus-communis_29813.t000096_RICCO
-----MEET
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LQLA-----LNPPFPQNHSGSKTHFQKPSCKLN-----

-----NPPRP-----TSSATPEPLLSISS-----
----APERLQPRKSLPLKRNDRRKGVGS---TTQALVVARRPDSSGGVEGPV-IT-LLA
NHFLVQFN-PS--QKIFHYNVEI-----
---SPN-PSR----EVARMIKQKLVKEN---SAVLSGAFPAYDGRKNLYSPVE-FQN
DRFEVYISLPIPTSKSSL-----PLGELNDFQEKHQQLKLFRLNIK
LV-SKLDGKELASYSKESDDWIPLPQDYLHALDVVLRSPME--KCIPVGRSFYSSSMG
----GTKEIGGGAVALR-----G-----FFQS-----
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GEERKEVEKALKNIRIFVCHRETVQR-YRVYGLTEQATENLW-----F
ADRDG-----KNLRLNLYFKDHYNYDIKFR-NLPC--LQISR--SKPCYLPME

CMICEGQKFLGKLSDDQTARILKMGCQR-PKERKAIINE-----VMR
GSVGPTSGNKDREFKLHVSREMTKLKGRILQPPKRLGN-GGSK--RDLIPS-RHDRQWN
LLDSHVLEGTRIERW--ALMSFGGTPE--QKSNIPKFINQLSQRCEQLGIFLNKNTIISP
-----QY-EPTQV-LNNVSLLESKLLKIHKAAS-----NNLQLLICIMEKRHKG
--YADLKRIAETSVGVVSQCC-LFPNLGKL---S--S---QFLANLALKINAK-----
----VGGCTVALFNSLPSQIPRLLHSD---DPVIFMGADVTHP----HPLD-DFSPSVAA
VVGSMNWPAANKYASRMRSQTHRQEIIQDL-----GAMVKELDDFFQEVGK
L-PKRIIFFR---DGVSETQFHKVLQEELQAIREACSRF---PGYRPPITFAVVQKRHHT
RLFPCETDLASIQNQFYDENIPPGTVVDTVITHPKEDFYLCSHW-----GVKGTS
RPTHYHVLWDENQFTSDELQKLVYNLCYTFVRCTKPVSLVPPAYAHAAAYRGRYLERS
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-----KN-----

-----LMF-----YC-----

>HbAGO7

-----MEDSE
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LQLA-----LTPFPQNHSSRSKTHLQKPSCKLNNHP-----

-----PPPCP-----NSSVSQGPVVTISS-----
----APEGLQRRKSTPVKGNKGKAMGS---PAQSLVAARRPDSGGVEGPV-IT-LLA
NHFLVQFN-SS--QRIFHYNVEI-----
---SPN-PSK---QVARLIKQLVEDN---SAVLSGAFPAYDGRKNFYSPVE-FQN
DRFEFYISLPIPTSKSSL-----PFREPKDSQERHQQLKFRINIK
LV-SKLDGKELSRYSKEGDDWIPLPQDYLHALDVVLRSPME--KCIPVGRSFYSSLMG
----GTTEIGGGAVGLR-----G-----FFQS----

-----LRPTQQGLALNVDF-SMTAFHESIGVIPYQKRLKFLRDLQPQNKARGLI
NEEMKDVDKALKNIRVVFCHRETVQK-YRVYGLTEETTENLW-----F
ADDRG-----KNLRLVSYFKDHYNIDIKFR-NLPC--LQISR--SKPCYLPME
CMICEGQKFLGKLSDDQTARILKMGCQR-PKERKNIIE-----VMR
GSVGPTSGNQSREFKLNVSREMTLNGRILQPPKRLRGD-GGLI--RDLVPS-RYDCQWN
LLDSHVFEKGRIERW--ALISFGGTSD--QKSNIPKFINQLSQRCEHLGIFLSKSTIISP
-----QY-EPTQV-LNNVALLESKLLKIHKAAS-----NNLQLLICIMEKRHKG
--YADLKRIAETNVGVVSQCC-LFANLGKL---S--S---QFLANLSLKINAK-----
----VGGCTVALYNSLPSQIPRLLHSD---EPAIFMGADVTHP----HPLD-DFSPSVAA
VVGSMNWPAANKYASRMRSQTHRQEIIQDL-----GAMVKELDDFFQEVGK
L-PKRIIFFR---DGVSETQFYKVLHEELQAIREACSSV---PGYRPLITFAVVQKRHHT

RLFPCETDISFIQNFYENENIPPGTVVDTVITHPKEDFYLCSHW-----GVKGT
RPTHYHILWDESOFTSDELQKLVYNLCYTFVRCTKPVSLVPPAYYAHAAAYRGRLYERS
-----E-SMASKRNVCTISRAAPPKATPLPKLTTTFFPPFNHQRLT
SNPPHCQPPPQDTGKRVETPSYAQRD-----

-----FLT-----F-----

>Ricinus-communis_29807.t000009_RICCO

-----MPLMQMKDFEES
YMVVSMQS-----LQTCKNLEIPFSNGDDNSETAKES--LG-----

-----RKRAN-----GRRSRGGKGLKVES-----
----KKILFQDYKLDSE---ES-SPS---SCKSLMFHRRPGHGQL-GTK-CI-VKA
NHFLAQM--PD--SDLSHYSVEI-----
----KPEVTSR----KLSKAIMTQLVKMH---RETDLGTRLPVYDGGRNLYTARS-LPF
TSKDFTITLVH-----EDEA-TGNIK---KRDFEVTIK
FE-ALAGMLQLRELLSGKPVD--TPQEAITVIDIVLRELAQ--RYVSIGRSFYSPDIK
----KPQQLEGGLESWR-----G-----FYQS-----
-----IRPTQMGLSLNIDM-SATAFIEPLLIEFVAQILNK----DVYSRPLS
DADRVKVKKALRGVKEVTHRRNVRRKYRISGLTTQPTRELI-----F
PLDEHM-----NMKSVVEYFQEMYDYTIQYP-HLPC--LQVGNQ-RKVNLYPMEA
CKIVRGQRYTKGLNEKQITSLKVSQR-PRDQEMDILQ-----TIH
QNGYEHDPYAK-EFGISIDSKLASIDARVLPAPWLKYS-DGKV--KEYLPQ---VGQWN
MMNKKVINGSIVRYW--ACINFERSVQ--ETTARSFCQQLVQMCRISGMDFNGEPIPI
-----YAARPQ-----VKKALKYVYHAAAKLE---GKELELLIAILPDSNGS
L-YGDLKRICETDGLISQCC-LTKHVFKI---N--R---QYLANVSLKINVK-----
---MGGRNTVLLDAISWRIP--LVSD---IPTIIFGADVTHP---ESGE-DISPSIAA
VVASQDWPEVTKYAGLVCAQPHRQELIQDLFKTWQDPQQGTVAGGMIRELLSFKKATGQ
K-PLRIIFYR---DGVSEGFYQVLLYELDAIRKACASL--EPSYQPPVTFVIVQKRHHT
RLFASNHNDRSSIDR--SGNILPGTVVDTKICHPTEFDYLCSHA-----GIQGT
RPAHYHVLWDENNFTADEIQSLTNLCYTYARCTRSVSVVPPAYYAHAAAYRARFYMEPD
-----ASENPKICRTL TANGSC-VRPLPALKEKV-----
-----KN-----

-----VMF-----YC-----

>Arabidopsis-thaliana_AT5G43810.1_ARATH

-----MPIRQMKDSSETHLVIKTQPLKHHNPKTVQNGKIPPPSPSPVTVTTP----
-----ATVTQSQASSPSPPSKN
RSRRNRGG-----RKSDQGDVCMRPSSRPR-----
-----KPPPP-----SQTSSAVSVATAG-----
----EIVAVNHQMQMG-----VRKNSNFAPRPGFGTL-GTK-CI-VKA
NHFLADL--PT--KDLNQYDVTI-----
---TPEVSSK----SVNRAIIAELVRLY--KESDLGRRLPAYDGRKSLYTAGE-LPF
TWKEFSVKIVD-----EDDGIINGPKR--ERSYKVAIK
FV-ARANMHHLGEFLAGKRAD--CPQEAVQILDIVLRELSVK--RFCPVGRSFFSPDIK
----TPQRLGEGLESWC-----G-----FYQS-----
-----IRPTQMGLSLNIDM-ASAAFIEPLPVIEFVAQLLGK----DVLSKPLS
DSDRVKIKKGLRGVKEVTHRANVRRKYRVAGLTTQPTRELM-----F
PVDENC-----TMKSVIEYFQEMYGFTIQHT-HLPC--LQVGNQ-KKASYLPMEA
CKIVEGQRYTKRLNEKQITALLKVTCQR-PRDRENDILR-----TVQ
HNAYDQDPYAK-EFGMNISEKLASVEARILPAPWLKYHE-NGKE--KDCLPQ---VGQWN
MMNKKMINGMTVSRW--ACVNFSRSVQ--ENVARGFCNELGQMCEVSGMEFNPEPVIPI
-----YSARPDQ-----VEKALKHVYHTSMNKTK--GKELELLAILPDNNGS
L-YGDLKRICETELGLISQCC-LTKHVFKI--S--K---QYLANVSLKINVK-----
---MGGRRNTVLVDAISCRIP--LVSD---IPTIIFGADVTHP---ENGE-ESSPSIAA
VVASQDWPEVTKYAGLVCAQHRQELIQDLYKTWQDPVRGBTVSGMIRDLLISFRKATGQ
K-PLRIIFYR---DGVSEGFYQVLLYELDAIRKACASL--EPNYQPPVTFIVVQKRHHT
RLFANNHRDKNSTDR--SGNILPGTVVDTKICHPTEFDYLCSHA-----GIQGTS
RPAHYHVLWDENNFTADGIQSLTNNLCTYARCTRSVSIVPPAYYAHAAFRARFYLEPE
IMQD-----NGSPGKKNKTTTVGDVGVKPLPALKENV-----
-----KR-----

-----VMF-----YC-----

>HbAGO10

-----MVLIPSVVRTDTSHRNTLELERIELETAPEKKKSEKTEKEGK
SVEQSSSGPTGKRKNHGGHNRGGKSSRGRYSQKPPLSGQQSTRSSYPHQECETCGR--
-----NHGGVCYKAMGACYNCG

GIGHFA-----KDCTSTRRVGPLPATAEGSVQSPVTRGS-----

-----QPPSRGIGRGRGNPKDTLPKTAPVLAELD-----
--HFLRLKQGFRALSPEVHNHLAEVLP----LIKSLSYAPRPSYGQL-GTK-CI-VKA
NHFFAEL--PD--KDLNQYDVTI-----
----TPEVASR-----TTNRVIMAEVRLY---KESDLGMRLPAYDGRKSLYTAGE-LPF
AWKEFTIKHVD-----EEDGINGPKR---VREYKVVIK
FV-ARANMHHLGQFLAGKRAD---APQEALQILDIVLRELSTK--RYCPVGRSFFSPDIR
----VPQRLGDGLESWC-----G-----FYQS-----
-----IRPTQMGLSLNIDM-ASAAFIEPLPVIGFVAQLVGK-----DALLRPLS
DSDRIKIKKALRGVKEVTHRGNVRRKYRVSGLTSQPTRELV-----F
PVDDNS-----TMKSVVEYFQEMYGFTIQHT-HLPC--LQVGNQ-KKANYLPMEA
CKIVEGQRYTKRLNERQITALLKVTCQR-PRDRENDILQ-----TVQ
HNAYDQDPYAK-EFGIKISEKLASVEARILPAPWLKYHE-TGKE--KDCLPQ---VGQWN
MMNKKMINGMTVSRW--ACINFRSVQ---ESVARGFCNELAQMCQVSGMEFNPEPVIPI
-----YNARPDQ-----VEKALKHVYHASMNKT---GKELELLAILPDNNGS
L-YGDLKRICETDLGLISQCC-LTKHVFKT---SKHK---QYLANVSLKINVK-----
----MGGRNTVLLDAISCRIP--LVSD---IPTIIFGADVTHP----ENGE-DSSPSIAA
VVASQDWPEVTKYAGLVCAQHRQELIQDLYKTWQDPVIRGTVSGGMIRDLLVSFRKATGQ
K-PLRIIFYR---DGVSEGGFYQVLLYELDAIRKACASL--EPNYQPPVTFIVVQKRHHT
RLFANNHRDRSSTDK--SGNILPGTVVDSKICHPTDFFLCSHA-----GIQGTS
RPAHYHVLWDENNFTADGIQSLTNNLCYTYARCTRSVSVVPPAYYAHLAARFRARFYMEPE
-MQENGS-----T-GGGSVHGKTR-AGESGVRPLPALKENV-----
-----KR-----

-----VMF-----YC-----

>Ricinus-communis_29844.t000058_RICCO

-----MPIRQMKESSEQLHLVLTQLNTMNQPQKHHKIAQNGKGGPPQSQ-----
-----ETHNSKPQNQTSPPTKN
RGRRRRGRGG-----RKSDQGDVFTRPSSRPCTVVHKPVNQAGGL-----

-----LANAP-----NGNSGNICEMEMGL-----
-----GFPT-----SSKSLTYARRPGYGQL-GTK-CI-VKA
NHFFAEL--LD--KDLNQYDVTI-----
----TPEVASR-----TTNRAIMAEVRLY---KESDLGMRLPAYDGRKSLYTSGE-LPF
AWKEFIKLVLD-----EDDGVNGPKR---EREYKVVIK
FV-ARANMHHLGQFLAGKRAD---APQEALQILDIVLRELSTR--RYCPVGRSFFSPDIR

-----APQRLGDGLESWC-----G-----FYQS-----
-----IRPTQMGLSLNIDM-ASAAFIEPLPVIELVAQLLGK-----DVLRSRPLS
DADRIKIKKALRGVKEVTHRGVNRKRYRVSGLTSQPTRELV-----F
PVDDNS-----TMKSVVEYFQEMYGFTIQHT-HLPC--LQVGNQ-KKANYLPMEA
CKIVEGQRYTKRLNERQITALLKVTQQR-PRDRENDILQ-----TVQ
HNAYDQDPYAK-EFGIKISEKLASVEARILPAPWLKYHD-TGKE--KDCLPQ---VGQWN
MMNKKMINGMTVSRW--ACINFSRSVQ---ESVARGFCSELAQMCQVSGMEFNPEPVIPI
-----YSARPEQ-----VEKALKHVYHASMNKTK---GKELELLAILPDNNGT
L-YGDLKRICETDLGLISQCC-LTKHVFKI--S--K---QYLANVSLKINVK-----
---MGGRNTVLLDAISCRIP--LVSD---IPTIIFGADVTHP---ENGE-DSSPSIAA
VVASQDWPEVTKYAGLVCAQHRQELIQDLYKTWQDPVRGBTVSGMIRDLLVSFRKATGQ
K-PLRIIFYR---DGVSEGFYQVLLYELDAIRKACASL--EPNYQPPVTFIVVQKRHHT
RLFANNHRDRSSTDK--SGNILPGTVVDSKICHPTDFDFYLCSHA-----GIQGTS
RPAHYHVLWDENNFTADGIQSLTNLNCYTYARCTRSVSVPPAYAHLAARFRARFYMEPE
-----M-QDNGSTGRGTRAAGETGVRPLPALKENV-----
-----KR-----

-----VMF-----YC-----

>Populus-trichocarpa__POPTR_0008s15860_POPTR

-----MPVRQMKESSEQHVLVIKTHMQNSMNQPQKHHKTAQNGKGGPPQPLQ-----
-----ESSNTPQNQASPPAKN
RGRRRRGRGG-----RKSDQGDVCTRPSRPCTVAHKPV--LN-----
-----PTGDL-----LANASNGHIENSKN-----
----VCEMEMGLG-----FPT---SSKLSLAPRPGYGQV-GTK-CI-VKA
NHFLAEL--PD--KDLNQYDVTI-----
---TPEVASR---TMNRDIMAELVRLY--KSDSLGMRLPAYDGRKSLYTAGL-LPF
AWKEFIKID-----EEDGINGPKR---GREYKVVIK
FV-ARANMYHLGQFLAGKRAD--APQEALQILDIVLRELSSK--RYCPVGRSFFSPDIR
-----APQRLGDGLESWC-----G-----FYQS-----
-----IRPTQMGLSLNIDM-ASAAFIEPLPVIEFVAQLLGK-----DILSRPLS
DSDRVKIKKGLRGVKEVTHRGVNRKRYRVSGLTSQPTRELV-----F
PVDDNS-----TMKSVVEYFQEMYGFTIQHT-HLPC--LQVGNQ-KKANYLPMEA
CKIVEGQRYTKRLNERQITALLRVTQQR-PRDRENDILQ-----TVQ
HNAYDQDPYAK-EFGIKISEKLASVEARILPAPWLKYHE-TGKE--KDCLPQ---VGQWN
MMNKKMINGMTVSRW--ACINFSRSVQ---ESVARGFCNELAQMCQVSGMEFNSEPVPIPI
-----YNARPEH-----VEKALKHVYHASTNRKTK---GKELELLAILPDNNGS

L-YGDLKRICETDLGLITQCC-LSKHVFKI---S--K---QYLANLSLKINVK-----
---MGGRNTVLLDAISCRIP--LVSD---IPTIIFGADVTHP---ENGE-DSSPSIAA
VVASQDWPEVTKYAGLVCAQAHRQELIQDLYKTWQDPVRGTVSGGMIRDLLISFRKATGQ
K-PLRIIFYR---DGVSEGFYQVLLYELDAIRKACASL--EPNYQPPVTFIVVQKRHHT
RLFANNHRDRNSTDK--SGNILPGTVVDSKICHPTEFDYLCSHA-----GIQGTS
RPAHYHVLWDENNFTADGIQSLTNNLCYTYARCTRSVSVVPPAYAHLAAFRARFYTEPV
-MQENG-----A-GSGACHGAKGTR-TGESGVRPLPALKENV-----
-----KR-----

-----VMF-----YC-----

>Populus-trichocarpa__POPTR_0010s09150_POPTR

-----MNRAIMAEVRLY--KESDLGMRLPAYDGRKSLYTAGK-LPF
AWKEFAIKLVD-----AQDGISGPKR---EREYKVVIK
FV-ARANMYHLSQFLAGKHAD--APQEALQILDIVLRELSTK--RYCPVGRSFFSPDIR
----APQRLGDGLESWC-----G-----FYQS----
-----IRPTQMGLSLNIDM-ASAAFIEPLPVIEFVAQLLGK----DVLSRPLS
DSDRVKIKKGLRGVVKVEVTHRGSVRRKYRVSGLTSQPTRRELV-----F
PVDDNS-----TMKSVVEYFQEMYGFTIQHA-HLPC--LQVGNQ-KKANYLPMEA
CKIVEGQRYTKRLNERQITALLKVTCQR-PRDRENDILQ-----TVQ
NNAYDQDPYAK-EFGIKISEKLASVEARILPAPWLKYHE-TGKE--KDCLPQ--VGQWN
MMNKKMINGMTVSRW--ACINFRSVQ---ESVARGFCNELAQMCQVSGMEFNSEPVPI
-----YNARPEH-----VEKALKHVYHASTNRTK--GKELELLAILPDNNGS
L-YGDLKRICETDLGLITQCC-LSKHVFKI---S--K---QYLANVSLKINVK-----
---MGGRNTVLLDAISCRIP--LVSD---IPTIIFGADVTHP---ENGE-DSSPSIAA
VVASQDWPEVTKYAGLVCAQAHRQELIQDLYKTWQDPVRGTVSGGMIRDLLISFRKATGQ
K-PLRIIFYRRVLDGVSEGFYQVLLYELDAIRKACASL--EPNYQPPVTFIVVQKRHHT
RLFANNHRDRTSTDK--SGNILPGTVVDSKICHPTEFDYLCSHA-----GIQGTS
RPAHYHVLWDENNFTADGIQSLTNNLCYTYARCTRSVSVVPPAYAHLAAFRARFYTEPV
-MHETGS-----A-GSGAGHGAKGTR-TGESGVRPLPALKENV-----
-----KR-----

>Ricinus-communis_29677.t000007_RICCO

-----MVRKRRTEAPASGGESSEPH
EAASGGSQRPYERNAPPQQGPGGYPYQGGRSWGPQSQQGGRRGGGGRGRSGGMSQQQQYG--
-----GGPEYQGRGRGPPQQGG
RGGYGGGRSSSNRG-----GPPSVGPSRPPVPELHQATLAPYQAGVS-----

-----PQLMP-----SEGSSSSGPPEPSP-----
-VVVAQQMQELSIQQEVSSSQPIQAPPP-----SSKSMRFPLRPGKGST-GIR-CI-VKA
NHFFAEL--PD--KDLHQYDVTI-----
---TPEVTSR---GVNRAVMEQLVKLY--RESHLGKRLPAYDGRKSLYTAGP-LPF
ISKEFKITLID-----EDDGSGGQRR---EREFRVVIK
LA-ARADLHHLGLFLQGRQAD---APQEALQVLDIVLRELPTT--RYCPVGRSFYSPDLG
----RRQPLGEGLESWR-----G-----FYQS----
-----IRPTQMGLSLNIDM-SSTAFIEPLPVIDFVNQLLNR----DVSSRPLS
DADRVKIKKALRGVKVEVTHRGNMRRKYRISGLTSQATRELT-----F
PVDERG-----TMKSVVEYFYETYGFVIQHT-QWPC--LQVGNQ-QRPNYLPMEV
CKVVEGQRYSKRLNERQITALLKVTCQR-PQERERDIMQ-----TVH
HNAYGNDPYAK-EFGIKISEKLASVEARILPAPWLKYHD-TGRE--KDCLPQ---VGQWN
MMNKKMVNGGTVNNW--ICINFNRVQ--DSVARGFCYELAQMCIYISGMAFNPEPVLPP
-----VSARPEQ-----VEKVLKTRYHDAMTKLQ-Q-GKELDLLIVILPDNNGS
L-YGELKRICETDLGLVSQCC-LTKHVFRM---N-K---QYLANVALKINVK-----
---VGGRNTVLVDALSRRIP--LVSD---RPTIIFGADVTHP----HPGE-DSSPSIAA
VVASQDWPEVTKYAGLVCAQHRQELIQDLFKEWQDPVRGRVTGGMIKELLISFRATGQ
K-PQRIIFYR---DGVSEGFYQVLLYELDAIRKACASL--EPNYQPPVTFVVVQKRHHT
RLFANNHNRNAVDK--SGNILPGTVVDSKICHPTDFYLCSHA-----GIQGTS
RPAHYHVLWDENKFTADGLQSLTNNLCYTYARCTRSVSIVPPAYYAHLAAFRARFYMEPE
-TSDSGSMTSGPVGGRRGGMG-GGAGARSTRGP--AASA AVRPLPALKENV-----
-----KR-----

-----VMF-----YC-----

>HbAGO1

-----MVKQEGSSSQAIQ-----

-----ALPPP-----
-----SSKSMRFPLRPGKGST-GIR-CI-VKA

NHFFAEL--PD--KDLHQYDVTI-----
---TPEVSSR----GVNRAVMEQLVKLY--KESHLGKRLPAYDGRKSLYTAGP-LPF
ISKEFKIILID-----EDDGSGGPRR----EREFVVIK
LA-ARADLHHLGLFLQGRQAD---APQEALQVLDIVLRELPTT--RYCPVGRSFYSPDLG
----RRQPLGEGLESWR-----G-----FYQS-----
-----IRPTQMGLSLNIDM-SSTAFIEPLPVIDFVTQLLNR-----DVSSRPLS
DADRVKIKKALRGVKVEVTHRGNMRRKYRISGLTSQATRELT-----F
PVDERG-----TLKSVVEYFYETYGFVIQHT-QWPC--LQVGNQ-QRPNYLPMEV
CKIVEGQRYSKRLNERQITALLKVTCQR-PHERELDIMQ-----TVH
HNAYHNDPYAK-EFGIKISEKLASVEARILPPPWLKYHE-TGRE--RDCLPQ---VGQWN
MMNKKMVGNGGTVNNW--ICINFNRNVQ--DSVARGFCHELAQMCYISGMFAFNPEPVLPP
-----ISGRPEQ-----VEKVLKTRYHDAMTKLQPQ-GRELDLLIVILPDNNGS
L-YGDLKRICETDLGLVSQCC-LTKHVFKM---S-K---QYLANVALKINVK-----
---VGGRRNTVLVDALSRRIP--LVSD--RPTIIFGADVTHP---HPGE-DSSPSIAA
VVASQDWPEITKYAGLVCAQAHRQELIQDLFKEWQDPVRGKVS GGMIKELLISFRATGQ
K-PQRIIFYR---DGVSEGFYQVLLYELDAIRKACNSL--EPNYQPPVTFVVVQKRHHT
RLFANDHSDRNAVDR--SGNILPGTVVDSKICHPTEFDYLCSHA-----GIQGTS
RPAHYHVLWDENKFSADGLQSLTNLCYTYARCTRSVSIVPPAYAHAAFRARFYMEPE
-TSDSGSMTSGPVSGR--G-AMGGGTGARSTRGAASA AVRPLPALKENV-----
-----KR-----

-----VMF-----YC-----

>Populus-trichocarpa__POPTR_0012s03410_POPTR
-----MVRKRRTIPIQSGGESSESQET
DTGRGAQPPAERSGPPQGGGGGGYQGGRGWGPQSQQGGRGGGYGGRGRGGMQQQYQ--
-----GAPEYQGRGRGQPQQGG
RGYGGGRPGGGR-----GGPSSGFRPPAPELHQATPAPYPAVVT-----

-----TQPTP-----SEASSMRPPEPSL-----
-ATVSQQLQLSVEQEGSSSQAIQP-LPA---SSKSVRFPLRPGKGST-GIR-CI-VKA
NHFFAEL--PD--KDLHQYDVTI-----
---TPEVTSR----GVNRAVMEQLVKLY--RESHLGKRLPAYDGRKSLYTAGA-LPF
QAKDFKITLID-----DDDGS GGPRR----EREFKVTIK
LA-ARADLHHLGLFLRGQQAD---APQEALQVLDIVLRELPTA--RYCPVGRSFYSPDLG
----RRQSLGEGLESWR-----G-----FYQS-----
-----IRPTQMGLSLNIDM-SSTAFIEPLPVIDFVTQLLNR-----DVSSRPLS
DSDRVKIKKALRGVKVEVTHRGNMRRKYRISGLTSQATRELT-----F
PVDERG-----TLKSVVEYFYETYGFVIQHP-QWPC--LQVGNQ-QRPNYLPMEV

CKIVEGQRYSKRLNERQITALLKVTTCQR-PQEREKDIMQ-----TVY
HNAYHNDPYAK-EFGIKISDKLASVEARILPPPWLKYHD-TGRE--KDCLPQ---VGQWN
MMNKKMVNGGRVNNW--ICVNFSRNVQ---DSVARGFCYELAQMCCQISGMDFALEPLLAP
-----VSGRPEH-----VERVLKNRYHEAMTKLRPH-SKELDLLIVILPDNNGS
L-YGDLKRICETDLGLVSQCC-LTKHVFKM---S--K---QYLANVALKINVK-----
---VGGRNTVLVDAISRRIIP--LVSD---RPTIIFGADVTHP----HPGE-DSSPSIAA
VVASQDWPEVTKYAGLVCAQHRQELIQDLYKTWQDPVRGBTVSGGMKELLISFRATGQ
K-PQRIIFYR---DGVSEGGFYQVLLYELDAIRKACASL--EPNYQPPVTFVVVQKRHHT
RLFANDHRDRNAVDR--SGNILPGTVVDSKICHPTFEFDYLCSHA-----GIQGTS
RPAHYHVLWDEKFTADGLQSLTNNLCYTYARCTRSVIVPPAYYAHLAAFRFRFYMEPE
-TSDSESIASGMAGGRG--G-AGGGPRPTRGP--GANAAVRPLPALKENV-----

-----KR-----

-----VMF-----YC-----

>Populus-trichocarpa__POPTR_0015s05550_POPTR

-----MVRKRRETELPRSGGESSESQET
GAGRGAQPPAERSGPPQGGGGGGYQGG--GPQSQQVGRGGYGGGRGRGGMQQQHYG-
-----GAPEYQGRGRGQPQHGE
RGYGSGRSGGGRG-----GPPSGGPFRAPELHQATPAPYPAGMT-----

-----PQPMPSEARSSMPMLSEASSMQPLEPSP-----

-AAVSQQMQQLSIQEGSSSQATQP-PPA---SSKSMRFLRPGKGST-GIR-CI-VKA
NHFFAEL--PD--KDLHQYDVS-----
---TPEVSSR----GVNRAVMAQLVKLY--QESHLGKRLPAYDGRKSLYTAGA-LPF
QAKEFKIILID-----EDDGTGGQRR---EREFKVVIK
FA-ARADLHHLGLFLQKQAD---APQEALQVLDIVLRELPTA--RYCPVGRSFYSPDLG
----RRQSLGEGLESWR-----G-----FYQS-----

-----IRPTQMGLSLNIDM-SSTAFIEPLPVIDFVTQLLNR----DVSSRPLS

DSDRIKIKKALRGVREVTNRGNMRRKYRISGLTSQATRELT-----F

PVDERG-----TLKSVVEYFYETYGFVIQHT-QWPC--LQVGNQ-QRPNYLPMEV

CKIVEGQRYSKRLNERQITALLKVTTCQR-PQERERDIMQ-----TVY
HNAYHNDPYAK-EFGIRISEKLASVEARILPPPWLKYHD-TGRE--KDCLPQ---VGQWN
MMNKKMVNGGRVNNW--ICINFSRTVQ---DSVARGFCYELAQMCHISGMDFALEPLLPP
-----VGARPEQ-----VERVLKTRYHDAMTKLQPH-SKELDLLIVILPDNNGS
L-YGDLKRICETDLGLVSQCC-LTKHVFKM---S--K---QYLANVALKINVK-----
---VGGRNTVLVDALSRRIP--LVSD---RPTIIFGADVTHP----HPGE-DSSPSIAA
VVASQDWPEVTKYAGLVCAQHRQELIQDLYKTWQDPVRGBTVSGGMKELLISFRATGQ
K-PQRIIFYR---DGVSEGGFYQVLLHELDIAIRKACASL--EPNYQPPVTFVVVQKRHHT

RLFANDHRDRNAVDR--SGNILPGTVVDSKICHPTEFDYLCSHA-----GIQGTS
RPAHYHVLWDENKFTADGLQSLTNNLCYTYARCTRSVSIVPPAYYAHLAAFRARFYMEPE
-TSDSGSLTSGMASGRG--G-GGAGGRATRGP--AANA AVRPLPALKENV-----
-----KR-----

-----VMF-----YC-----

>Populus-trichocarpa__POPTR_0006s12010_POPTR

-----MYGRGRRGGSPAPTKGGGRGRGRGAPLSP-----

-----MASSEADSISSVSQLGGEMERLSV--QT-----

-----EPPAP-----TQAPAAIPAPQQQK-----

----QQQQQLV-----PASSVKFAQRPDHGTV-GSR-CL-IRA

NHFLVEL--AD--RDLHHYDVS-----

----TPEVASR----GVNRAIMRELLASN----STHFQSRKPAYDGRKGFYTAGP-LTF

TSKDFVVTL-----VDKDDQGSVRK--ERKFKVTVR

LA-SKTDLYHLKEFLQGRQRG---APHDTIQVLDVVLREPPSNKQVCTIVGRSFFTAGLG

----GQNEIGNGIECWK-----G-----FYQS----

-----LRPTQMGMMLNIDV-SVAAFYEPILAVDFVAKLLNLGDPI-RAATRPLS

DSDRAKLLKALRGVRVKVTHGEEKR--YKITGISASATNQLR-----F

AAEDG-----KQKSVVQYFLEKYNIRLRFA-SWPA--LQSGND-SRIFLPMEC

CKIIEGQRYSKKLNEKQVTALLREACRR-PVEREHSIEQ-----IVH

FNDVAQDDLAK-EFGVSVKELTCIDARVLPVLPVLYHD-LGKA--RTVRPR--VGQWN

MINAKLFNGATVNFV--MCVNSSLGE---QMAASFCRALVGMCMNKGMMVINPAPVFP

-----RSGHPNQ-----LEKTLAEVHSMCNER----KQLQILIIILPDVSGS

--YGTIKRVCETELGIVSQCC-QPKQARKC---S--P---QYLENVALKINVK-----

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IVASMDWPEVTTYRGLVSAQKHRQEIIQDC-----AGMIRELMIAFRRTTNQ

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RLFATN--PNQTDK--SGNILPGTVVDTKICHPSEHDFYLCSHA-----GIQGTS

RPVHYHVLCDMINKFTADCLQMLTNNLCYTYARCTRSVSVPPAYYAHLAAFRARYYIEGD

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-----KN-----

-----VMF-----YC-----

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----KPEMTSL-----PPA----SSKAVTFPVRPGRGTL-GKK-VM-VRA  
NHFLVQV--AD--RDLYHYDVS-----  
---NPEVISK----TVNRNVMKLLVKNY--KDSHLGGKSPAYDGRKSLYTAGP-LPF  
DSKEFVVNLAEK-----RADGSSGK-----DRPFKVAVK  
NV-TSTDLYQLQQFLDRKQRE---APYDTIQVLDVVLDRKPSN--DYVSVGRSFFHTSLG  
KDARDGRGELGDGIEYWR-----G-----YFQS-----  
-----LRLTQMGLSLNIDV-SARSFYEPIVVTDFISKFLNI-----RDLNRPLR  
DSDRLKVKKVLRTLKVKLLHWNGTKS-AKISGISSLPIRELR-----F  
TLEDK-----SEKTVVQYFAEKYNYRVKYQ-ALPA--IQTGSD-TRPVYLPME  
CQIDEGQRYTKRLNEKQVTALLKATCQR-PPDRENSIKN-----LVV  
KNNYNDD--LSKEFGMSVTTQLASIEARVLPMPMLKYHD-SGKE--KMVNPR---LGQWN  
MIDKKMVNGAKVTSW--TCVSFSTRID---RGLPQEFCKQLIGMCVSKGMEFKPQPAIPF  
-----ISCPPEH-----IEEALLDIHKRAP-----GLQLLIVILPDVTGS  
--YGIKIKRICETELGIVSQCC-QPRQVNKL---N--K---QYMENVALKINVK-----  
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RLFPEQHGNRDMTDK--SGNIQPGTVVDTKICHPNEFDYLNLSHA-----GIQGTS  
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---STKRRGARIAGRKMSQGAFKKVLEKL-----AAEGYNFANPID-LRT
HWAKHATRL-----LHSATESSNERFHAHRGSTNPCK
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----GTGSPPELHFLQCFPPRADFRSCFFNHFAFISLPHVG-----FFEGLISWA
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TFDDKS-----TNVSLVQYFRERYNIGLKYT-SLPA--LQVGSC-SKPIYLPMEV
CRIVEGQRYSKKLNERQVIALKATCQR-PHERENSIKH-----IIW
QNDYNRDELMRNEHGIQVKEELTFIDARVLPMP-----TGVE--ACADPH---LGQWN
MINKKMVNGGRVEFW--TCVNFLQVN---QNLPEFCRQLIDMCVSKGMGFNPNPILPV
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K-PSRLILYR---FGVSEGQFFQALLPEIDAIRMACSSL--EEGYLPPVTYIVVQKRHHT
RLFPVD---RRQTDR--SGNILPGTVIDTRICHPMEDFFLKSHA-----GIQGTS
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-----KD-----

-----VMF-----

-----YC-----

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-----M-----

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-----RTLFSPNFG

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NLDDNN-----TNMSVVQYFRERYNVELSYT-SLPALQLQARSD-SNPIYLPMEI
CRILEGQRYSRNLNLRQVIALKATCQR-PHERENSIKR-----IIR
QNNYSGDELVRNEFGIQ-----LKYHE-TGDE--ASVVPR---LGQWN
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-----KD-----

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-----HPRIM-----SVAPSQMRPQALAS-----SSRASPSQA
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NHFLVEI--AD--RDLCRYDVTM-----

---TPEVASK---KVKRYIISQLVSMY---RESHLGNRMPAYDGRKGLYTAGP-LPF
ESKEFVIKLV-----ENNG-AGSSASTTKERQFKVAIK
FA-SKVDIHHLRFLSCRQMD---APQEMIQLNIVLRASIP--NYSSVGRTLFSPNFG
-----PRDGLGDDIEYWR-----G-----YYQS-----
-----LRPTQMGLSFNIDV-SATSFEPIMVTEFVAKYFSL-----KDMSRPLS
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CRILEGQRYSRNLNLRQVIALKATCQR-PHERENSIKR-----IIR
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K-PSRIIFYR---DSVSEGGKFSEVLLHEMNNAIRKACSSL--EEEYLPPVTYVVVVRKRHHT
RLFPVD---RGETDR--SGNILPGTVIDTKICLQKEFDYFYNLSHS-----AIQGTS
RPTHYHVLYDENHFIADGLQVLTNNLCYMNARCTRSVSIVPPVYAHLAALRARYYIDGE
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-----KD-----

-----VMF-----YC-----

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EAKFVVKLVE-----KNDPASSSSS---ERQFNVAIK
YA-SKVDNMNHLKEFLSQRQKD---VPQETIQILDIVLRASPSE--KYVTVGRSFFSLDLG
----KKGELGNGIEYWR-----G-----YYQS----
-----LRPTQMGLSLNIDV-SARSFYEPILVTEFVAKYFNL----RDLRPLS
DQDRVKVKRALRGIVKVEISYRDYARS-FKVTGISNLPVDKTM-----F
TLDDKK-----TKVSVHQYFWDYRNYGLKYT-SLPP--LQAGTD-AKPIYLPME
CKIAGGQRYTKKLNQRVQVALLRATCQR-PSARENSIKE-----ANN
LSSTSLNVLVRNEFGIQVKEELTSVDARVLPPLMKYHD-TGRE--ARVDPH---LGQWN
MINKKMNKMGKIDFW--TCVNFSTRVQ---RDLPFEFQWQLMDMCNSKGMFHPDPIIQI
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--YGIKRICETELGIVSQCC-QPQQAQKL---S--K---QYLENVALKINVK-----
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-----VMF-----YC-----

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CKIVDGQRYSKKLNERTVALLRATCQR-PHEREESIKQ-----MVK
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--YGIKRVCETELGIVSQCC-QPRQAAKL---S--K---QYFENVALKINVK-----
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