

	10	20	30	40	50	60	70	80	90	100	110	120
At4g12490	SSGNCPIDA-LRLGVCANVL	-----	SGLLNVLQGPSP	-----	QPCCSLIQGLVDLDA	VCLCTALRANVLGI	NLNVPISLSVLL	NVCNRRLP	SNFQCA	-----		
At4g12500	SSGNCPIDA-LRLGVCANVL	-----	SGLLNVLQGPSP	-----	QPCCSLIQGLVDLDA	ICLCTALRANVLGI	NLNVPISLSVLL	NVCNRRLP	SDFQCA	-----		
At4g12480	SSGNCPIDA-LRLGVCANVL	-----	SSLLNIQGLQPSA	-----	QPCCSLIQGLVDLDA	ICLCTALRANVLGI	NLNVPISLSVLL	NVCNRRLP	SGFQCA	-----		
At4g12470	SGNSCPIDA-LKLGVCANVL	-----	SSLLNIQGLQPSA	-----	QPCCSLIQGLVDLDA	ICLCTALRANVLGI	NLNVPISLSVLL	NVCNRRLP	SGFQCA	-----		
At1g62510	AIACPRDA-LKLGVCANVL	-----	NGLLNVTLGKPPV	-----	EPCCSLIQGLADLEAA	ACLCTALKANILGI	NLNIPISLSLLL	NVCSKKVP	RGFQC	-----		
At1g12090	GSSKCPKDT-LKLGVCANVL	-----	NGLLDLTLGKPPV	-----	EPCCSLIQGLADVEAA	VCLCTALKANILGI	NLNIPISLSLLL	NVCSKQLP	PGFQC	-----		
At4g12520	STGSCPKDT-LKLGVCANVL	-----	KDLLKIQGLTPPV	-----	KPCCSLIQGLVLEAA	ACLCTALKANILGI	NLNVPISLSLLL	NVCGKKVP	SGFVCA	-----		
At4g12510	STGSCPKDT-LKLGVCANVL	-----	KDLLKIQGLTPPV	-----	KPCCSLIQGLVLEAA	ACLCTALKANILGI	NLNVPISLSLLL	NVCGKKVP	SGFVCA	-----		
At2g45180	VKPTCPDT-LKLGVCADLL	-----	GLNVVVVGSPPK	-----	TPCCSLIQGLANLEAA	VCLCTALKANVLGI	NLNVPISLTL	NYCGKKVP	HGFQCS	-----		
At4g12550	TTGTCPKNS-IEIGTCVTVL	-----	NLVDLTLGNPPV	-----	KPCCSLIQGLADLEAA	VCLCTAVKASILGIVNINLPINLSVLL	NVCSRNP	KSFQCA	-----			
At4g22460	TTGTCPKNS-LKGVVCNVAL	-----	NLLNGLTPGTPPV	-----	TPCCSLIQGLVLEAA	ICLCTALKASVLGI	NLTLPINLSLLL	NICNREAS	RDQFQ	-----		
At4g12545	TTGTCPIQ-----ISTCANVL	-----	NLVDLTLGNPPV	-----	KPCCSLIQGLADLEAA	ACLCTALKASILGIVNINLPINLSVLL	NVCSRNP	KGFQCA	-----			
At4g12530	ADNTCPDV-LKLSTCSNVL	-----	NLLNKLKAPAM	-----	RPCCSLIQGLIDLDA	VCLCTALKASILGI	TDTPIHNLAL	NACGGTLP	DGFRCP	-----		
At1g62500	KQPTCPINA-LKLGACVDVL	-----	GGLIHIGLGNPVE	-----	NVCCPVLQGLLELEAA	VCLCTIRLKLNL	NIFIPALQALI	TCGINPP	SGFVCPPLT	-----		
At2g10940	GKATCPIDT-LKLGACVDLL	-----	GGLIKIGLGNPAV	-----	NKCCPLIQGLVLEAA	ACLCTALKALDL	NLYVPVALQLL	TCGNPP	PGYCSI	-----		
At4g00165	ATTKCPRDT-LKFGVCSWL	-----	GLVSEV-IGTPPS	-----	QECCSLIKGLADFEAA	VCLCTALKTSILGVAPVKIPVALTLL	NSCGKNVP	QGFVC	-----			
At3g22120	IPETCPIDT-LKLGACVDVL	-----	GGLIHIGLKSNAK	-----	AECCPVLGGLLDLDA	VCLCTTIRKLNL	DLVLPALQLL	DCGKTPP	SDFKCP	-----		
At4g15160	KPETCPIDA-LKLGACVDVL	-----	GGLIHIGLKSNAK	-----	AKCCPLLDLGLDA	VCLCTTIRKLNL	DLIPALQLL	DCGKTPP	RGFKCPTPLKRTPL	-----		
At4g22490	NFGSCPRNP-LQGVCANVL	-----	GLANVTAGDPA	-----	TPCCSLIQGLVLEAA	ICLCTALKASVLGI	NLTLPINLSLLL	ACNRP	IGFQCP	-----		
At4g22520	QAPVCPRDS-TQFLSCNVL	-----	NLSLILINNQS	-----	LPCCSLIQGLADLEAA	ACLCTALKANILGI	NLNVPISLSVLL	LCRIIPP	LGFRCP	-----		
At3g22142	MPKTCPIDT-LKLGSCVDLL	-----	GGLVHIGLKSNAK	-----	EKCCPVLQGLVLEAA	VCLCTTIRKLNL	DLVLPALQLL	NCGNPP	PGFKCP	-----		
At4g22517	AQVCPPLNR-SDLGICNVL	-----	GLISLTSNA	-----	RCCSLIQGLVLEAA	ACLCTALKANILGI	NLNVPISLSVLL	PGFNCLL	-----			
At4g22485	PRGTCPRNA-NQIRTCNVL	-----	RFFGNFLDRLA	-----	QPCCSLIQGLVLEAA	ACLCDLVRARR	TLSPNIILCR	ACGRIP	RGFTCP	-----		
At1g12100	TTSPCSRDA-IKLGVCakil	-----	DVAVGTIGNPSD	-----	TLCCSVLQGLVLEAA	VCLCTTIRKANILGI	NIDLPISLSLLL	NTCGKLP	SDCICA	-----		
At4g22610	QPPTCPRDI-----EACSNVF	-----	GLGRILNYQTV	-----	RPCCSLIQGLADLEAA	VCLCTTIRKANILGI	NLNVPISLSVLL	LCGADYPP	PGFRCRENISVLSYNGASMAL	-----		
At5g46900	PKPTC-KDA-LKLVKANVL	-----	DLVKVSLPPTS	-----	NCCALIKGLVLEAA	VCLCTALKANVLGI	NLNVPISLNVV	NHCGKKVP	SGFKCA	-----		
At5g46890	LKPTC-KDA-LKLVKANVL	-----	DVVKVSLPPTS	-----	NCCALIKGLVLEAA	VCLCTALKANVLGI	NLNVPISLNVV	NHCGKKVP	SGFKCA	-----		
At4g22470	LVGTCCKND-TELKICAGIL	-----	AISDGLLTGRA	-----	EPCCSIVRNVSLDAV	TCCFKSVGARRF	SLSPNFGIFFK	VCGRRIP	QGFSCP	-----		
St1	AQPTCPIDA-LKLGACVDVL	-----	GGLIHIGIGGSAK	-----	QTCCPLIQGLVLEAA	ICLCTTIRKLNL	NILPILQVLI	DDCGKYP	KDFKCPST	-----		
St2	TKATCPIDT-LKLGACVDLL	-----	GGLVHIGLGDPAV	-----	NCCPILQGLVLEAA	ACLCTTIRKLNL	KIVVPLALQLL	TCGKSP	GYTCSI	-----		
St3	SKGKCPKDT-LKLNACANLL	-----	NDLVHLVIGSSPAK	-----	TKCCSLIQGLADLEAA	VCLCTALKANVLGI	NLNVPISLSLLL	NNCGKYVP	KDFQCA	-----		
St4	SKGKCPIDT-LKLGVCANVL	-----	GNLLGVVLGNPPK	-----	KPCCSLIQGLVLEAA	ICLCTALKANILGI	NLNVPISLSLLL	NVCGKKAP	SGFQCPK	-----		
St5	SKGTCLKDT-LKLNACANLL	-----	GDLLHLVIGSSPTK	-----	TKCCSLIQGLVLEAA	VCLCTALKANILGI	NLDIPISLNL	NNCGKYAP	KNFQCA	-----		
St6	TYHKCPKDT-LKLVKANVL	-----	NDLVHVIIGSPPLS	-----	KSSCCSLIQGLVLEAA	ACLCTALKANVLGI	NLNVPISLSLLL	NNCGKAP	KGFKA	-----		
St7	KEDKCPKDA-LKLGVCANVL	-----	SGLLNVTLTGTPPV	-----	KPCCSLIQGLVLEAA	VCLCTALKANILGI	NLNVPISLSLLL	NVCSKQVP	KGFICA	-----		
St8	SQTKCPKDA-LKLSICANVL	-----	NGLLNVTLTGTPPV	-----	KPCCSLIQGLVLEAA	ICLCTALKANILGI	NLNVPISLSLLL	NVCSKEAP	KEFICP	-----		
St9	KYKTCPIDT-LKLGVCADVL	-----	GLNVVVVGSPPV	-----	TPCCSLIQGLADVEAA	ICLCTALKANVLGI	NLNVPISLSLLL	NVCSKKVP	YGFQCPN	-----		
St10	SKGSCPRDA-LKLGVCANVL	-----	NGPIGAVIGTPPD	-----	PHCCMVLLGLDLEAA	ICLCTALKANILGI	NLNVPISLSLLL	NTCGKTL	SDFICA	-----		
St11	PKETCPIDT-LKLGVCADVL	-----	GLNVVIGSPPV	-----	TPCCSLIQGLANLEAA	ICLCTALKANILGI	NLNVPISLSLLL	NVCSKEAP	AGFQCS	-----		
St12	APSKCPKDT-LKFGICGDWL	-----	GLVHEVIGAKPS	-----	SKCCALLEGIADEAA	ICLCTAINANVLGVKLKVPISVVL	NSCGKKVP	KGFKA	-----			
St13	VNPYCPRDT-LKLGVCADLL	-----	GLNVVIGSQVT	-----	TPCCSLIQGLADLEAA	ACLCTALKANILGI	NLNVPISLSVLL	SACAKVP	TGFKCG	-----		
St14	GQQTCP--T-LRLGVASIL	-----	NVNVVTGSPPT	-----	MPCCSLIQGLDLEAA	ACLCAIRANVLGI	NLNVPISLNL	SACGRSL	ADFTC	-----		
St16	KEGKCPKDA-LKLGVCANVL	-----	SGLLNVTLTGTPPV	-----	KPCCSLIQGLVLEAA	VCLCTALKANILGI	NLNVPISLSLLL	NVCSKQVP	KGFICA	-----		
St15	GQVRCPRDA-LKLGVCANIL	-----	NLVNVVVGSPP	-----	LPCCSLIQGLANLEAA	ACLCTAIRANILGI	NLNVPISLNL	NNCGMNS	GFTC	-----		
Pt1	PATTCPLDT-LKLGACVDVL	-----	GGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	VCLCTIKASVNL	NIVLPALQLL	ACGKSP	SGFTCP	-----		
Pt2	GGGSCPIDT-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKLNL	NILPILQLL	QCGTTP	PGFKCPPLN	-----		
Pt3	GGSSCPLDA-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	DQCCPLIQGLVLEAA	ICLCTTIRKLNL	NVILPILQLL	QCGTTP	PGFTCPSL	-----		
Pt4	GGSSCPLDA-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKLNL	NVILPILQLL	QCGTTP	PGFTCPPLN	-----		
Pt5	GGSSCPLDA-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKLNL	NVILPILQLL	QCGTTP	PGFTCPPLN	-----		
Pt6	GGSSCPLDA-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKLNL	NVILPILQLL	QCGTTP	PGFTCPPLN	-----		
Pt7	GGSSCPLDA-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKLNL	NVILPILQLL	QCGTTP	PGFTCPPLN	-----		
Pt8	STAKCPLNA-LKLGACVDLL	-----	QGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKVLNL	NVILPILQLL	SCGLTVP	PDFKCPAN	-----		
Pt9	GGSSCPLDA-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKLNL	NVILPILQLL	QCGTTP	PGFTCPPLN	-----		
Pt10	SFSSCPLDA-LKLGACVDLL	-----	GSLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKLNL	NVILPILQLL	QCGTTP	PGFTCPPLN	-----		
Pt11	SNPKCPKDT-LKLGACVDLL	-----	GGLVHVGIGDPVV	-----	NECCPVLQGLVLEAA	ICLCTAIRKVLNL	NVILPILQLL	SCGLTVP	EGFKCP	-----		
Pt12	XTAKCPLNX-LKLGACVDLX	-----	QGLVHVGIGDPVV	-----	NQCCPVLQGLVLEAA	ICLCTTIRKVLNL	NVILPILQLL	SCGLTVP	PDFKCPAN	-----		

Pt13 GGSSCPLDA-LKLGACVDLL-----EGLVHVVGIDPVP-----NQCCPLIEGVAALEAA-LCLCTTIRLKLDDV-NVILPLALELFV---QCGLTTPP--PGFTCPPL-----
 Pt14 GSSSCPLDA-LKLGACVDLL-----GSLVNLGIDPDP-----NQCCPVIQGVLELEAA-LCFCTTIRLKLNL-NVILPLALELFV---QCGVTTPP--PGFTCPPLN-----
 Pt15 PQSSCPLANPVSINVCVDLL-----GLVHVVLGNPNT-----AECCDIING-LGV DAT-VCLCTAIHLKVLGL-NVDIPLPLKLLV---SCGQDLP--NGLTC-----
 Pt16 STPKCPLNA-LKLGACVDLL-----QGLVHVGLGDPVP-----NQCCPLIQGVAALEAA-LCLCTTIRAKVLSL-NVLLPIALSIVA---SCGLTVP--PDFKCPAN-----
 Pt17 GSSSCPLDA-LKLGACVDLL-----GGLVHVGIIDPVP-----NQCCPLIQGVAALEAA-LCLCTTIRAKLNL-NVILPLALELFV---QCGVTTPP--PGFTCPPL-----
 Pt18 GSSSCPLDA-LKLGAFVDLL-----GGLVHVGIIDPVP-----NQCCPVLGVLLEAA-LCLCTTIRLKLNL-NVILPLALELFV---QCGFTTPP--PGFTCPPLS-----
 Pt19 STAKCPLNA-LKLGACVDLL-----QGLVHVGLGDPVP-----NQCCPLIQGVAALEXX-LCLCTTXXAXXLX-NVLLPXALSIVA---SCGLTVP--PNFKCPAN-----
 Pt20 SNPKCPKDT-LKLGACVDLL-----XGLVHVLLFFKIX-----XXCWGGKHNLGLEAA-LCLCTAIRKKILSL-NVYLPLALELIA---SCGLTTPP--EGFKCPEAS-----
 Pt21 GSTSCPLDA-LKLGACVDLL-----GGLVHVGIIDPVP-----NQCCPVLGVLLEAA-LCLCTTIRLKLNL-NVILPLALELFV---QCGFTTPP--PGFTCPPLN-----
 Zm2 PTGKCPVDT-LKLLACVDAL-----NGLVHAVVGTNAS-----DTCCPLLSGVADLDA-LCLCTTIKAKALSV-SLVLPVAISVLV---NECGKHVP--SSFQCP-----
 Zm4 PTGKCPVNT-LKLLACVDAL-----NGLVHAVIGTKAS-----DTCCPLLSGVADLDA-LCLCTTIKAKALSV-SLVLPVAISVLV---NECGKHVP--SSFQCP-----
 Zm14 PRGKCPVNT-LKLLACVDAL-----NGFVHAVFGTKAR-----DTCCPLFSGVADLDA-FCFPPPIKAKAFRV-SLVFPVAISVVF---NEWGKHVP--SSFQCP-----
 Zm16 RRGKCPVNT-LKLLAWVDAL-----NGFVHAVFGTKAS-----DTCCPLFSGVADLDA-FCFPPPIKAKAFRV-SLVFPVAISVVF---NEWGKHVP--SSFQCP-----
 Zm6 AVRTCPIDT-LKLNACVDVL-----SGLIHLVIGQEAR-----SKCCPLVQGVADLDA-LCLCTTIRARLLNI-NIYLPIALNLLI---TCGKHAP--SGFQCPPLYD-----
 Zm34 AGGTCPIDT-LKLNAGVDVL-----SGLIPLVIGQEAR-----SKCCPLVQGGGDLDA-LCLCTPIRGGLLNI-NIYLPIALNLLI---TWGKHAP--SGFQCPPLYD-----
 Zm3 SSPTCPADS-LKLGACVDLL-----GGLVHVIGLDPVP-----NKCCPVLGVLLEAA-LCLCTTIKRLLLNI-NIYLPLALQLL---TCGKTPP--PGYTCTV-----
 Zm5 SSPTCPADS-LKLGACVDLL-----GGLVHVIGLDPVP-----NKCCPVLGVLLEAA-LCLCTTIKRLLLNI-NIYLPLALQLL---TCGKTPP--PGYTCTV-----
 Zm1 SSPTCPADS-LKLGACVDLL-----GGLVHVIGLDPVP-----NKCCPVLGVLLEAA-LCLCTTIKRLLLNI-NIYLPLALQLL---TCGKTPP--PGFTCPV-----
 Zm12 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGKICP--EDFTCPN-----
 Zm18 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGKICP--EDFTCPN-----
 Zm9 SHGRCPIDA-LKLKVCANVL-----GLVNVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGKICP--EDFTCPN-----
 Zm35 SHGRCPMDA-FKLKVCANVL-----GFVKVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPFNFNFIL---NNWVKICP--EDFTCPN-----
 Zm13 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQY-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGKICP--EDFTCPN-----
 Zm17 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQY-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGRICP--EDFTCPN-----
 Zm10 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQP-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGKICP--EDFTCPN-----
 Zm7 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLDI-HLNVPPLSLNLL---NNCGKICP--KDFTCPN-----
 Zm8 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGKICP--KDFTCPN-----
 Zm11 SHGRCPIDT-LKLKVCANVL-----GLVKVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-DLNVPPLSLNLL---NNCGKICP--KDFTCPN-----
 Zm15 SHGRCPIDA-LKLKVCANVL-----DLVKVGLPQH-----EQCCPLLEGLVDLDA-LCLCTAIKANVLGI-HLNVPPLSLNLL---NNCGKICP--KDFTCPN-----
 Zm19 SHGRCPIDA-LKLKVCANVL-----GLVKVGLPQY-----EQCCPLLEGLVDLDA-LCLCTVIKANALGI-HLNAPPLSLNLL---NNCSKICP--EDFTCPN-----
 Zm33 SAGRCPIA-LKLKGCANVL-----DLVKGGLPQH-----EQCCPVLGVLLEADAG-LCLCTGIKANGELGI-HLNGPLSLNLL---NNCGKICP--KDFTCPN-----
 Zm45 TTGACPINA-LKLKVGANGL-----DLGKGLPQH-----EQCCPLLEGLVDLDA-LGLCTGIKANGELGI-HLNGPLSLNLL---NNCGKICP--KDFTCPN-----
 Zm44 SAGSCPIA-LKLEVCANVL-----NLLRLNIGVPDD-----EQCCPLLOGLADLDA-VCLCLAIRANILGI-VLNVPIDLTLL---NYCHKDRV--ASFTCPA-----
 Zm52 GGNPCPTSAVADLKVCADVL-----VLKLRINVPQG-----QQCCPLLGGLLDLDA-ACLC AAIRNALGV-PVNLPLDVPVLV---NYCGRNASAVPGSNCPF-----
 Zm29 GHGSCPRNA-LKLGVCANVL-----GLVKAKVGPPT-----EPCCSLLDGLVDLEAA-VCLCTAVKANILGI-NLNLPIDLSLIL---NNCGKNCP--NDFHCA-----
 Zm20 -FGKCPRDA-LKMGVCANVL-----GLIKAKVGPPT-----EPCCPLLEGLVDLEAA-VCLCTAIKGEVLGI-KLNLPVDLSLIL---NHCGKTVP--TGFKCL-----
 Zm22 SFGKCPRDA-LKLGVCANVL-----GLIKAKVGPPT-----EPCCPLLEGLVDLEAA-VCLCTAIKGEVLGI-KLNLPVDLSLIL---NHCGKTVP--TGFKCL-----
 Zm21 SFGKCPRDA-LKLGVCANVL-----GLIKAKVGPPT-----EPCCPLLEGLVDLEAA-VCLCTAIKGEVLGI-KLNLPVDLSLIL---NHCGKTVP--TGFKCL-----
 Zm30 SFGKCPRDA-LKLGVCANVL-----GLIKAKVGPPT-----EPCCPLLEGLVDLEAA-VCLCTAIKGEVLGI-KLNLPVDLSLIL---NHCGKTVP--TGFKCL-----
 Zm26 SFGKCPRDA-LKLGVCANVL-----GLIKAKVGPPT-----EPCCPLLEGLVDLEAA-VCLCTAIKGEVLGI-KLNLPVDLSLIL---NHCGKTVP--TGFKCL-----
 Zm43 SFGKCPRDA-FKLKVCANVL-----GLIKAKVGPPE-----EPCCPLLEGLVDLEAA-VCLCTAIKGEVLGI-KLNLPVDLSLIL---NYCGRTVP--TGFKC-----
 Zm28 SFGKCPRDA-LKLGVCANVL-----GLIKAKVGPPT-----EPCCPLLEGLVDLEAA-VCLCTAIKGEVLGI-KLNLPVDLSLIL---NYCGRTVP--TGFKC-----
 Zm37 WYGHCPDNA-LKLGVCANVL-----DLIKAKVGPVN-----EPCCPLLEGLVDLEAA-VCLCTAIKANVLGI-NLNLPIDLSLIL---NFCGKVP--TGFKCL-----
 Zm23 TSGRCPVDA-LKLGVCANLL-----NGLINATLGTTPR-----TPCCTLIQGLADLEAA-VCLCTVLRANVLGI-NLNLPINLSLV---NYCGRRVP--SGFQCF-----
 Zm27 TSGRCPVDA-LKLGVCANLL-----NGLINATLGTTPR-----TPCCTLIQGLADLEAA-VCLCTVLRANVLGI-NLNLPINLSLV---NYCGRRVP--SGFQCF-----
 Zm39 ---RCTVDA-LKLGVCANML-----NGLINATLGTPLR-----TPCCTLIQGLADLEAA-LCLCTVLRANVVGI-NLNLPINLSLV---NYCGRRVP--SGFQCF-----
 Zm36 KKGKCPKDT-LKLGVCANVL-----SGLDLTLCKPPV-----EPCCSLIQGLADLEAA-VCLCTALKANVLGI-NLNLPISLSLL---NVCSKQVP--PGFQC-----
 Zm31 SGGKCPKNA-LKLGVCANVL-----GLVKVSIKVPT-----DSCPLLGLADLEAA-VCLCTALKANVLGI-NLDVPVKLTLL---NYCGKSV--QGFLCA-----
 Zm32 SGGKCPKNA-LKLGVCANVL-----GLVKVSIKVPT-----DSCPLLGLADLEAA-VCLCTALKANVLGI-NLDVPVKLTLL---NYCGKSV--QGFLCA-----
 Zm41 SSGKCPDNA-LKFGVCADVL-----GLVKGEGKVP-----EPCCTLIKGLADFEAA-VCLCTAIKANVLGI-VDPVPIKLSALV---NYCGKVP--KGYLCA-----
 Zm48 SNGKCPDNA-LKFGVCADVL-----GLVKGEGKVP-----EPCCTLIKGLADFEAA-VCLCTAIKANVLGI-VDPVPIKLSALV---NYCGKVP--KGYLCA-----
 Zm38 SSGKCPDNA-LKFGVCADVL-----GLVKGEGKVP-----EPCCTLIKGLADFEAA-VCLCTAIKANVLGI-VDPVPIKLSALV---NYCGKVP--KGYMCA-----
 Zm46 SSGKCPDNA-LKFGVCANAL-----GLVKGEGKVP-----EPCCNLIKGLADFEAA-VCLCTAIKANVLGI-VDPVPIKLSALV---NYCGKVP--KGYMCA-----
 Zm50 FSGKCPDNA-LKFGVWVNL-----GLVKGEGKVP-----EPCCNLIKGLADFEAA-VCFCTAIKGVNLGI-VDPVPIKLSALV---NYCGKVP--KGYMCA-----
 Zm47 TGGKCPKHA-LKFAACANVL-----GLVSAEVGHPPA-----EPCCSILGGLADLEAA-VCLCTAIKANVLGI-TVDIPVKLSLII---NYCGKVP--SGFICA-----
 Zm24 SSDKCPIDA-LKLGACVDVL-----GNEVHVGDANV-----QCCPLVKGIAGLSAA-ACLC TAIKAKVLDI-SVYVPALAEVLV---NCGCAVP--PGYKCT-----
 Zm25 SSDKCPIDA-LKLGACVDIL-----GNEVHVGDANV-----KCCPLVKGIAGLSAA-ACLC TAIKAKVLDI-SVYVPALAEVLV---NCGCAVP--PGYKCT-----
 Zm42 SLDRCPIA-LKLGACVDVF-----GNEVHVGDANV-----QCCPLVKGIAGLFAA-GGLCTAIKAKVLDI-SVYVPALAEVLV---NCGWAVP--PGYKCT-----

Zm49 SLDKCPIDA-LKLGACVDVF-----GNEVHVGDANV-----QCCPFVKGIAGLFGG-GCLCTAIKAKVLDI-SVYVPIALEVFV---NWGWAVP--PGYKCT-----
 Zm40 SWDKCPIDA-LKLGACVAIF-----GNEVHIGDANV-----KCCPLVKGIAGLSAA-GCLCTPIKAKVRDI-SVYVPIALGVLV---NCGWEVP--PGYKCT-----
 Zm51 TRLECPWDA-VKFGACVGLL-----GAAGLQGGAAQLG-----SKCCDVVQGLAAAEVG-ACFTTVKEAVLGV-PTEDWDVGVGLA--SACKTEL--DGFKCV-----
 Le11 GQGKCPKDA-LKLGVCANVL-----NLNVNVTVGSPPP-----LPCCSLIQGLTDLEAA-VCLCTAIRANVLGI-NLNIPISLSLVL--NNCGRNPP--TGFTC-----
 Le1 AQPTCPIDA-LKLGACVDVL-----GGLIHIGIGGSAK-----QTCPLLGGVLVDLDA--ICLCTTIRKLLNI-NIILPIALQVLI--DDCGKYPP--KDFKCPST-----
 Le2 TKATCPIDT-LKLGACVDLL-----GGLVHIGLGDPAV-----NECCPILSGLVELEAA-ACLTTLKVKLLNI-KIYVPLALQLLV---TCGKSPP--PGYTCSI-----
 Le5 SKGKCPIDT-LKLGVCANVL-----GNLIGVVLGNPPK-----KPCCSLIEGLVDLEAA-ICLCTAIKANILGI-NLNVPISLSLLL--NVCGKKAP--SGFQCPK-----
 Le6 SQTGCPRDA-LKLGVCANVL-----NGLNVTLTGTPPV-----KPCCSLIGNLVDLEAA-VCLCTALKANILGI-NLDIPISLSLLL--NVCTKEAP--KGFICS-----
 Le7 KEGKCPKDT-LKLGVCANVL-----SGLNVTLTGTPPV-----KPCCSLIEGLVDLEAA-ACLTALKANVLGI-NLNIPISLSLLL--NVCSKDPV--KGFICA-----
 Le8 KYKTCPIDT-LKLGVCANVL-----GLNVVVVGSPPV-----TPCCSLISGLADVEAA-LCLCTALKANVLGI-NLNVPISLSLLL--NVCSKKVP--NGFQCPN-----
 Le9 SKGHCPRDA-LKLGVCANVL-----NGPVGAVIGTPPD-----PHCCMVLLGGLLDLEAA-VCLCTALKANILGI-NINIPIALSLLI--NTCGKTL--SDFICA-----
 Le10 VSADCSIDI-LKFGACTNII-----NDLVGVIIIGTPT-----SSCCSLIDGLLDLEAA-VCLCTALKANILGI-NLDIPLSLNILL--NVCGKKYP--TGYTC-----
 Le12 VSADCSIDI-LKFGACTNII-----NDLVGVIIIGTPT-----SSCCSLIEGLVDLEAA-VCLCTAIKADILGI-NLDIPLSLNILL--NVCGKNYP--TGYTC-----
 Le13 PKETCPIDT-LKLGVCADVL-----GLNVVVVGSPPV-----TPCCTLLSGLANAEAA-LCLCTALKANILGI-NLNIPISLSLLL--NVCSKEAP--AGFQCS-----
 Le14 SQQTCSIDI-LKLGVCANIL-----NLNVVIVGSPPT-----LPCCSLIQGLTDLEAA-VCLCTAIKANVLGI-NLNVPISLSLIL--NTCGKKYP--TGFTC-----
 Le15 VNPYCPRDT-LKLGVCADLL-----GLNVNAIGSQVT-----TPCCSLIEGLADLEVA-ACLTAIKANVLGI-VKLDIPVALSALV-SACAKKVPT--GFKCG-----
 Le16 PPATCPIDA-LKLGCLCDVL-----GGLVHIGIGNPVE-----HICCPVLQGLADLEAA-ICLCTTIRKLLNI-NIFLPLALSVA--TCGLTTP--PGFVCPPLV-----
 Le19 GQVRCPRDA-LKLGVCANVL-----NLNVVVVGSPPT-----LPCCSLIQGLANLEVA-ACLTAIRANILGI-NLNVPITLSLIL--NNCGMNN--SGFTC-----
 Le3 SKGKCPKDT-LKLNACANLL-----GDLLHLVVGSSPA-----KTQCCSLIEGLVDLDA--VCLCTALKANVLGI-NLNIPISLSLLL--NNCGKYAP--KNFQCK-----
 Le4 SKGKCPKDT-LKLNACANLL-----NDLVHLVIGSSPA-----KTKCCSLIHGLADLDA--VCLCTALKANLLGI-NLNVPISLSLLL--NNCGKYVP--KDFQC-----
 Le17 SKGKCPKDT-LKLNACANLL-----GDLLHLVVGSSPA-----KTQCCSLIEGLVDLDA--VCLCTALKANVLGI-NLNVPISLSLLL--NNCGKYAP--KNFQCA-----
 Le18 TYHKCPKNT-LKLKVCANLL-----NDLVHVVVGSPPLSS--KSSCCSLIENLADVDAA-VCLCTAIKANVGA-HLNAALSLSLLL--NNCGKTAP--KGFKA-----
 Mt10 AQQTCSIDA-LKLGACVDVL-----GGLIHIGIGGSAK-----QTCPLLQGLVDLDA--ICLCTTIRKLLNI-NLVIPLALQVL--IDCGKTPP--EGFKCPAS-----
 Mt1 AKDTCPIDT-LKLGACVDLL-----GGLVHIGLGDPAV-----NKCCPVLQGLADLEAA-ACLTTLKVKLLNI-KIYVPLALQLL--LTGKTPP--PGYTCSL-----
 Mt2 GTASCPRDA-LKLGVCANVL-----NGLNVTLTGQPPV-----TPCCTLLNGLVDLEAA-VCLCTALKANILGI-NLNIPISLSLLL--NVCSKQAP--RDFQCY-----
 Mt4 SSGTCPRDA-LKLGVCANVL-----SGLNLTLTGKPPV-----TPCCSLNGLVDLEAA-ACLTALKANILGI-NLNIPISLSLLL--NVCSRKVP--HDFQCA-----
 Mt3 TSQKCPSDT-LKLGVCADVL-----GLNVVIVGSPAS-----SKCCALLQGLVDLDA--ICLCTAIKANVLGI-NLNVPITLSLLL--SACEKSV--SGFQCS-----
 Mt5 KNPTCPRDT-IFKGVCAVDL-----GLINVELGKPPK-----TPCCSLIDGLANLEAA-VCLCTALKANVLGI-NLNIPINLSVL--NYCGKGV--KGFVCA-----
 Mt7 KHPTCPRDT-IFKGVCAVDL-----GLINVELGKPPK-----TPCCSLIDGLANLEAA-VCLCTALKANVLGI-NLNIPINLSVL--NYCGKGV--KGFVCA-----
 Mt11 --PTCPRDT-IFKGVCAVDL-----GLINVELGKPPK-----TPCWSLIDGLANLEAA-VCLCTALKANVLGI-NLNIPINLSVL--NYCGKGV--KGFVCA-----
 Mt12 STKSCPRDA-LKLGVCANLL-----NGPIGAVIGSPPE-----HPCCSILEGLVDLEVA-VCLCTAIKANILGI-DINIPISLSLIL--NACEKTPP--TDFQVLLIKVL-----
 Mt13 KHPTCPRDT-IFKGVCAVDL-----GLINVELGKPPK-----TPCCSLIDGLANLEAA-VCLCTALKANVLGI-NLNIPINLSVL--NYCGKGV--KGFVRLI-----
 Mt6 PKGQCPKDT-LKLGVCADLL-----GLNVVVGSPPPG-----SKCCALIKGLADLEAA-LCLCTALKANVLGI-NLNVPITLSLLL--SACQKTV--PGFQCP-----
 Mt9 PKGTCPIDA-LKLGVCANLL-----NLVKVKLGSPPT-----LPCCSLIQGLADLEAA-ACLTALKAKVLGI-HLDVPIISLSVIL--NNCGRN--SGFKT-----
 Mt8 PQGHCPKDT-LKLGVCADVL-----GLNVVVGNPPAS-----GSNCCAIKGLADLDA--LCLCTAIKANVLGI-NLNVPITLWIL--GACQKTIP--PGFQCA-----
 Mt14 PPQNCLNLT--LNICAKVL-----NNVVGGLNPR-----NNCCSLISGLVDLDA--VCVCAALKANIIIGI-SVINADLKIL--NSCGVNT--AGFTCRR-----
 Os04g52250 PTGKCPVDT-LKLLACVDAL-----NGLVHAVVGATAG-----DTCCPLLSGVADLDA--LCLCTAIKAKALGI-SLVLPVAISVLV--NDCGKYVP--SDFQCPSTDPYI*-----
 Os06g07220 ATKTCPIDA-LKLNACVDVL-----GGLIHVLVIGQKAR-----AKCCPLVQGVADLDA--LCLCTTIRARLLNI-NIYLPVALELL--ITCGKHP--PGFKCPPLYGA*-----
 Os04g52260 PTGKCPVNT-LKLLACVDAL-----NGLVHAVVGAKAS-----DTCCPLLSGVADLDA--LCLCTAIKAKALGI-SLVLPVAISVLV--NECGKHP--SSFQCP*-----
 Os06g43600 ATQRCPRDT-LKIGACVDLL-----GGLVHVIGIDPVV-----NKCCPLIEGLVLEAA-VCLCTTIRKLLNI-NIYLPALQLL--LTGKNPP--PGYTCSI*-----
 Os03g01310 GGNKCPIDA-LKLGVCANVL-----NLLKLVGVPPAS-----EECCPLLGGVLVDLDA--VCLCTAIKANVLGI-NINVPVDLVLIL--NYCHKTC--SDFSCPLI*-----
 Os10g40480 RHGRCPIDA-LKLRVCTNVL-----NGLVGKIGAGP-----DDCCPLLGLADLDA--VCLCTAVKANVLM-KLNLAVDLSLIL--NKCGKICP--SDFTC*-----
 Os03g01320 GGGRCPIDT-LKLGVCANVL-----NGLINVQLGTPPR-----QPCCSLIQGLADLEAA-VCLCTALRANILGI-NLNIPINLSLLV--NYCGRSVP--SGFQCSN*-----
 Os03g01300 GGGRCPIDT-LKLSVCANVL-----NLLKLVGVPPES-----EQCCPLLGGVLVDLDA--VCLCTAIKANILGI-NLNIPVDLSLIL--NYCHKTC--SDFTCPL*-----
 Os10g40440 GHGRCPIDA-LKLRVCANVL-----NGLVGKIGAGP-----DDCCPLLGLADLDA--VCLCTAIKANVLGI-INLNIPVDLSLIL--NNCGKICP--SDFTC*-----
 Os02g44310 AFGRCPRDA-LKLGVCANVL-----GLIKAKVGPPA-----EPCCPLIEGLVDLEAA-VCLCTAIRGNILGI-NLNLPIDLSLIL--NYCGKTV--TGFKC*-----
 Os04g46810 AFGKCPRDA-LKLGVCANVL-----GLIKAKVGPPA-----EPCCPLIEGLVDLEAA-VCLCTAIRGNILGI-NLNLPVDLSLIL--NYCGKRV--TGFKC*-----
 Os04g46820 AFGKCPRDA-LKLGVCANVL-----GLIKAKVGPPA-----EPCCPLIEGLVDLEAA-VCLCTAIRGNILGI-NLNLPVDLSLIL--NYCGKRV--TGFKCF*-----
 Os10g40520 STGSCPRDA-LKLRVCANVL-----GLVKAKGVAVAP-----YEPCCSLDGLVDLDA--VCLCTAVKANVLGI-KLDLPVDLSLIL--NNCGKICP--SDFKCVH*-----
 Os10g40430 GHGRCPIDA-LKLRVCANVL-----NGALGVNVGHGPPY-----DDCCPLLGLADLDA--VCLCTAVKANVLGI-NLNVPVDELKIL--NKCGKTC--SDFTC*-----
 Os10g40614 WYGKCPIDA-LKLGVCANVL-----DLIKAKGVPPAT-----EPCCPLLGLVDLEAA-VCLCTAIKANVLGI-NLNLPIDLSLIL--NFCGKVP--TGFMC*-----
 Os10g40530 GSSCPRDA-LKLVVCANVL-----GLVKAKGVAVAP-----YEPCCSLDGLVDLDA--VCLCTAIKANVLGI-KLNLPIDLSLIL--NNCGKICP--SDYQCVH*-----
 Os10g40510 GAGSCPRDA-LKLVVCANVL-----GLVKAKGVAVAP-----YEPCCSLDGLVDLDA--VCLCTAIKANVLGI-NLNIPIDLSLIL--NNCGKICP--SDYQCA*-----
 Os10g20890 DHGRCPIDA-LKLRVCANLL-----NGLIGVKIGRGP-----DDCCPLLGLADLDA--VCLCTALKANVLGI-INLNLPVDLSLIL--NKCGKNYP--SGFTC*-----
 Os10g40460 RHGHCPIDA-LKLRVCANVL-----NGLVGKIGAGP-----NECCSLIGIADLDA--VCLCTAVKANVLGI-NLNLPVDLSLIL--NKCNKIYP--SGFTC*-----
 Os10g40470 RHGHCPIDA-LKLRVCANVL-----NGLVGKIGAGP-----NECCSLIGIADLDA--VCLCTAVKANVLGI-NLNLPVDLSLIL--NKCSKIYP--SGFTC*-----
 Os10g20830 EHGRCPIINT-LKLRVCANVL-----NGLVDAKIGHGT-----DDCCSLISGIADLDA--VCLCTAVKANVLGI-RVNLFPVDLSIML--NKCGKTC--SDFTC*-----
 Os10g20840 EHGRCPIINA-LKLRVCANVL-----NRLVDVKIGHGP-----DDCCSLISGIADLDA--VCLCTAVKANVLGI-RVNLFPVDLSLIL--NKCGKSCP--SDFTC*-----

Os04g46830 YHNKCPVNT-LKFGACADV-----GAISGEVGQVP-----AQPCCSLISGLADLEAA-VCLCTAIKANVLGV-VVNIPVKLSLLV--NYCGKCVP--SGYTCA*-----
 Os06g01580 PAGKCPINT-VKLGVCADV-----DGLIHASTPPK-----EPCCPLIAGLADLDAA-VCVCLAINANLLGL-NLDVPVDLSLLL--NYCGCKLP--AGFNTRGGCWRRGGG-----
 Os02g44320 YNTKCPKNA-LKFAACADV-----GLVSAEVGQPP-----YEPCCGVLGGLADLEAA-VCLCTAIKANVLGI-TLDIPVKLSLLV--NYCGKNVP--SGFICA*-----
 Os10g40420 AGAKCPFDA-LKLAACADVGGGGGGGGLNLGHLLGNSSPSSSGEQCCGLLAGLADVDA--VCLCTALRANVLGL-VGVEPHVQLSVLV-NRCSRKLP--NGFQCSSN*-----
 Os04g55170 VNPFCPWA-VKFGACAGV-----GVVGVOAGAH-----GSKCCALVDGLAAAEAA-ACFCTTIKESVLGI-PTewTVGVSVLV--STCKTELP--DGFKCV*-----
 Os10g09920 TGGTCPINV-LNLAVCANV-----SLNVPS-----QCCTLLQGLADLDAA-LCLCAALKANILGV-INVDVLVDVTLL-LNSCNRTCP--PGFTCPL*-----
 Os03g14654 PPPKCPLAL-INLNACISV-----GLGNPLLNQ-----ACCSQLSSLPSDTAA-VCLCEAIKVNALVN-LKVKIPDIL-----KVCCKV--SAVVCV*-----
 Os03g50960 RGNPCPTSALADLKVCADVVL--LKLKINVPASQ-----QCCPLLGSVLNLDAA-ACLCAAIRLSVLGI-PVNLPLDVPLVL--NYCGRNASA-AGANCS*-----
 Os03g26800 PAVDCTAAEALKVGACLDYVTF---GNPFRSQPSK-----ACCGEVKGVLDIAGVGCLCAAISTHALPL-PINATRVLLP---AACGADAS--AFTMCLGQSTYFDLLLL*-----