

Supplementary Figure 1 Alignment of RT domains of non-LTR retrotransposons to generate the phylogenetic tree shown as Fig. 2. This alignment was based on previous reports (Malik et al. 1999; Burke et al. 2002; Kojima and Fujiwara 2004).

CLUSTAL X (1.81) multiple sequence alignment

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ldt          -----KNITYLELISALQTL-KG----SAPGLNRSYQMIKNS----SPTTKHRITKLFN
l-DmeI      -----ENITYLELSSALQTL-KG----CAPGLNRSYQMIKNS----SHTTKNRITKLFN
You         -----SNFTLLEIENSVAKA-KG----KSPGADRVSYPMLKNL----SPHLKTKLLDIFN
cgt_1_3    -----HTVSI EEVRQATLTKA-----TTPGIDGITTKLLQSI----WGLIATPVQKLFQ
mgr583     -----TQVSAEEAERSCIGVTS----TSPGIDGITVRLKAG----WASLAEPVRRLYQ
mars1      -----VPVTDDEIKAILFACSPK----KAPGPDGVNFACL RHA----YTALPSWFNMLYR
R1DmeI     -----PALEVF EVDTCVARLKSR----RSPGLDGINGTICKAV----WRAIPEHLASLFS
R1Dyak     -----PALESHEVEACIARLKSK----RSPGLDGINGAICKAV----WRAIPQHLSLYS
R1Dmerc    -----PVLDP I EVDTCAKVRSR----RSPGLDGITGDMVKAV----CTA IPEHMTLYT
R1Sc       -----PDLEMDEVSDSVRRCKVR----KSPGPDGIVGEMVRAV----WGA IPEYMFCLYK
TRAS1      -----PSFTVNELKHALKSFNPK----KAPGADGLTSDICTHA----VDLDQKFLGLIN
R1Bm       -----DPLSKDSLRAIIGSLKN----TAPGIDGLTARIKKA----LPAAEA EFVAVYA
RT1        -----TQVTIPELRLI ASTMPNK----KAPGLDGI PNAAVKAA----I LAYTDVFQALYQ
RT2        -----APVTDELLLIASQMANH----KAPGLDGI PNAAVKTA----I MLFPES SGFLYQ
SART1      -----EEVSPA EFGAAIEKMKARR----TAPGPDGLSNRAWALALQT---EGGLGPVLRGLLS
LOA        -----KSTVTKEKLNWAI GTFQPY----KSPGMDG I SPAFLQTG----QDILLSRIRKALV
Lian       -----SIVTTESI QWALNSFAPF----KSPGADGI YPVLLQKG----FDFIQHVLKLLA
TRIM       -----ILRLLQENISWAI RSFKPY----KSAGPDGI FPAQLIHA----GYKAI NWLKI IYE
BILBO      -----HILTKWKFSWAVNSFKSY----KSPGPDKVIPTQLQKA----GDMAI NWLQSI FR
JockeyDmeI -----SAVTLEE VKNL IAKLPLK----KAPGEDLLDNRTIRLL----PDQALQFLALIFN
jockeydf   -----DPVTLEE VKELVSKLKPK----KAPGEDLLDNRTIRLL----PDQALLYLVLIFN
doc        -----EFRPCELAKVIKEQLNPR----KSPGYDLITPRMLIEL----PKCAI LHI CLLFN
F          -----VFRPKEITKI I KDNLSPK----KSPGYDLITPEMI IQL----PHSAVRYITKLFN
CUTWORM    -----VTKFTKQELIRAI NS- IKPT---KAPGYDLITGMI LQKL----PDTALTFLLSIYN
G          -----QPVAPEEIAQEIASLRNG----KSPGPDRIDATALKML----PTFCSQLLANIFN
HelenaDyak -----KAPGYDRICHATLKV L-----PIKAI IYIALIFN
helena mau -----KAPGIDRICHATLKV L-----PIKARIYIALIFN
BS         -----KPIRVEEIVEAIKSLPLK----KSPGIDNVCNATLKAL----PVRTILYLAL IYN
TART       -----QPI TLKELNDEIKNLKNS----KAPGKDLITNQLIKTL----PTKATLYLIL IYN
AMY        -----PPVTPMEVKDLIKDLRPR----KAPGSDGVS YRVIKLL----PVGLI VMLASIFN
JuanA      -----WETYLEEVRTI I KFKNM----KAPGDDGI FYILIKKL----PESSL SFLVDIFN
JuanC      -----FNTDLNEIKSI I KQFKNM----KAPGEDGI FYILIKKL----PEANLSCLVKIFN
strider    -----CRVTYPEVFSI VKALHTR----KSPGIDGIPN I SLKNL----PTSAI NHIVNIAN
NCR1CTH   -----LTDVNEI I VSI I RNLNPN----KSPGLDDVNNI L IKNL----PPKGF EYLKFI IN
T1         -----ISVSSETV VQVLFGLKRS----FTPGPDGIPASVLI NC----KDVLA PHLAKIFN
Q          -----PFIDSEI VLSALAQLKPS----FAPGPDGIPSTVLKRC----QTTVAPI LAKLFN
CR1        -----PTLRAEQVRDRMLR LDEY----KSSGPDGVHPRVLKEL----AEVVAEPLSI IFE
TurtCR1   -----PSVLKEQVQDYLERXDXH----KSMGXDAXHPRV LREL----ADVIXEPLAI IFE
SR1        -----VDLSADLVLRKLQHLR KD----TSPGPD MVHSAV LREA----ASILATPLSVMFA
Sam3       -----DFTPINI CR I I QKLRPK----IGFSQDN I NFFVIKKC----VHLSVPLS IFS
Sam6       -----DTHPLT LSNL I KKLKPK----LGYSRDN I NFFI LKCC----ADSI LPLS IFS
Dong       -----DDVTEEEITTI TARLHNW----KSPGIDKI HNFWFKKL----ICLHKTI AKNLT
DongAg1   -----VNAQDI REATQYTRNG-----AAPGPDFVYNFYKKL----ITIHQI AACFN
Rex6Fr    GPVVITLADI QTRGS-MKSWT-----APEPDKI HAYWLKKL----TALHEGLAAQRN
Rex60I    ---TITVADI QERVSGMKNWT-----APGPDMI HAYWLKKL----TALHERLAAQIN
EhRLE1    --ITINELNLS--LKRISNWK-----APG-IDTI HGYWKRMS----SSREAIPTIFN
EhRLE2    -RIITKENI ENVI TRIPSWK-----APG-IENMHGYWKRLE----SVRDRLVIVFN
EhRLE3    -MSIITPNELDCDTKFVDKFE-----IKLKM I KYKGFWIKYLE----QPKKYLLKLFN
NeSL      ---MEKKFI GKEVAFALR-KTKD----TAQGADGLRYHHLQWFD P----SGELLAKVYN
YURECi    -----ITSEEVEAVLSGLNVQ----SAPGSDGLSYRFWKGLDP----SGRLLSCLFE

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R2Ci-D	---	LSKPFVVEVSKALREVKVA	---	SASGPDGVSVSGMTKIG	---	ARVLCMLFN
R2Am	---	SP IYPGEVSAAVKLMDS	---	GATGPDGFSVRSLKCTP	---	SRVLAKVFN
R2Dr	---	SKSEVQTSRLNASNA	---	STPGPDGVGKRDISNWD	---	ECETLTQLFN
R2Ci-A	---	LLDPI TPDEVRQILGSMSS	---	KAPGPDGHRLSDLRIP	---	IDQICSHFN
R2Ci-B	---	MEPLTIAEVGSTLKSTTP	---	SAPGPKLTLDGVKRIP	---	IAELVSHYN
R2Ci-C	---	EP IVAEEVRLVRKSMPT	---	SAPGPDGIRHKDFMAVQ	---	PQILADNFN
R2Sciara	---	DPVSLIEIKSARASNE	---	KGAGPDGVTPRSWNALD	---	DRYKRLLYN
HERODr	---	NMKEPCRSEVEEVVRRARSS	---	SAPGSPGVYPYKVKNCPK	---	LLHRLWKALK
HEROTn	---	NTKAPTWKEIQTVVRAARNN	---	SAPGPNVGYL VYKRCPK	---	LLARLWKILR
HEROFr	---	KLAEPSLKEVKEAVMAARSS	---	SSPGSPGVYRKYKQCPK	---	LLVRFWKIMK
RTE1	---	PPFLPEEIRHVLRSFPNG	---	KAAGQDKISADFLKSC	---	HDNVIDLITDRFN
RTE2	---	PA I LKSEVRLEIRKLT	---	SAPGLDNVDAAMLKNG	---	GDTVVDVSTALFN
R2Dmel	---	SA I TEQDLRASRVLS	---	SSPGPDGITPKSAREV	---	PSGIMLRIMN
R2Dsim	---	SA I TEHDLRASRISLS	---	SSPGPDGITPKSAREV	---	PSGIMLRIMN
R2Dyak	---	SA I TEQDLRASRVLS	---	SSPGPDGVTPKTAREV	---	PSGIVRIMN
R2Dmerc	---	SP I T SRDLQVHKVPLT	---	SSPGPDGITSQTARSI	---	PIGIMLRIVN
R2ear	---	EPV TIEELHCCHLEMT	---	TSPGPDGITVRQLYL	---	PEQLLVIRLN
R2Fa	---	EPV TIEELHCCHLEMT	---	TSPGPDGITVRQLYL	---	PEQLLVIRLN
R2Bm	---	KP I SVEEIKASRFDWR	---	TSPGPDGIRSGQWRAV	---	PVHLKAEMFN
R2is	---	ITLAELNALRSTPSK	---	TAKGVDGVLGEEELKRV	---	PRRTLFIILN
L1rat	---	NP I TPKEIEAVTKGLPTK	---	KSPGPDGFSAEFYQTF	---	I EDLIPILSKLFH
L1Mm	---	SP I SPKEIEAVINSLPTK	---	KSPGPDGFSAEFYQTF	---	KEDLIPILHKLHF
L1dog	---	RP I TREEIEAVIKNLPRH	---	KSPGPDGFPGFEFYQTF	---	KEEIPILLKLFQ
L1hs	---	RP I TGSEIVA I INSLPTK	---	KSPGPDGF TAEFYQRY	---	KEELVPFLLKLFQ
swimmermedaka	---	TA I TEEIEQFAIRKLGSG	---	KMAGADGFSPEWYKTM	---	ETHLIPITLLKTFN
swimmerpupfish	---	SK I TEEVLSA I KRLKTG	---	KSPGADGYNSEWYKSM	---	QEELVPTLLRAFN
SWDr1	---	NPFSKDEFIRAVSSMQNG	---	KSPGPDGFSEFFKFF	---	SGELAPILLSLYE
Ta11	---	AAVSKNEIREAVFAIRSS	---	SAPGVDGFTGFFFQKY	---	WSIICLQVTKIQ
ATLN60	---	IK I SSSLEIKALFISAD	---	KAPGPDGFSASFHAY	---	WDIIEADVSRDIR
KoshiFr1	---	RPLQLDELNADLHGMQGR	---	RAPGVDGLTVEFYRAF	---	WDI VAHDMLEVFN
KoshiTn1	---	GPLSVSELHAALQRMQGR	---	RAPGINGLTVEFYKAY	---	WDI VAPDLLEVFN
KoshiFr2	---	ADLTLEELYVALMSLANG	---	KAPGIDGIPVEFYKAF	---	WSVVGKDMLEVFL
KoshiTn2	---	AEVTLPELHAALSLQNG	---	KAPGMDGLPVEFYKSF	---	WDVICTDLLEVV
KoshiDr1	---	KAVTLEELKQALQSMECN	---	KVPGIDGLPAEFYKTF	---	WKEVGLDLLQVIN
KoshiDr2	---	VDFKFEEVTAAVMDLSSG	---	TAPGIDGLSSEFFKTF	---	WTLIGADYYEVLK
Tx1L	---	TP I TDELSQLRLMPHN	---	KSPGLDGLTIEFFQFF	---	WDTLGPDFHRVLT
MutsuDr2	---	RE I EEEEEIEA I NQLNKK	---	KSPGIDGIGNEFYIVF	---	KDILKGI LKEVFK
MutsuDr3	---	QE I GEEERKA I ESLNKK	---	KSPGIDGLNSEFYVCF	---	KEILIPILTDVFK
MutsuDr1	---	EE I REEERKA I SGLNKK	---	KSPGIDGLGSEFYIVF	---	KDILSSILKEVYD
DewaDr1	---	SD I TEEINEA I TQLSNG	---	KSPGLDGLSSEFYKTF	---	KDVLIPILKDLFI
KenoDr1	---	QDFKKEDLDKALKSFKKG	---	KSPGMDGLPLEFYQCF	---	WDILAGVLLTVFN
TRE3-B	---	SPFIQDEVEAAIKTCNPN	---	KSPGPDGV TNAFYINH	---	LNQVKPILTTLFN
TRE3-A	---	NEFTSQEILEV I KQLNPH	---	KSPGPDGIPNLFYITH	---	KEKLAPILASAFN
TRE3-C	---	RP IRIHEVTKA I KTSSIH	---	KSPGLDGINALFYKYH	---	INSIARILTI AFN
TRE5-A	---	QPIEGYEIRLGIKIQEG	---	KAPGKDGLLPTFYKNH	---	INEILPI I SKLYN
Zorro-1	---		---		---	WETCGPLLVNMG
Zorro-3	---	KAF I EENVYDHLLMINKK	---	TAVGTDGISYQNLIEL	---	WPSLGESELRAGN
slacs	---	SVDAEEVAKT IARRLTRG	---	AAPGLDGWTRELLYPL	---	TLDPALKMEIAAVK
CZAR	---	VTFDSKELAK I GSRLTRG	---	AAPGLDGWTRELLYPL	---	TKDKALLMEITAILT
CRE1	---	RAKEQKVRRA I AARMGRG	---	TAPGLDGWTRELLPL	---	AEDPALLHEITSVVS
CRE2	---	AVKPERVRAV I TKQLGRA	---	AAPGLDGWTRELLVPI	---	TEDKGLLTEL TALVQ
GiIM	---	SPK I TAKALLKELQAMRP	---	VAAGPSGLGKPHLLHL	---	CGAAGAAELFTSVL
GiIT	---	APK I TGKALVRELRSMAK	---	VATGPSGLGKAHLLHL	---	CDKAGAAEVFATAL
BGR	---	KPFSLEELRESLDKS-HD	---	TAPGEDEIHYQFLKHL	---	PEPSLAVLLGVYN
Tad1	---	ELVDEEDVQDVL SRMAPN	---	KAPGIDWYSNRFLKLC	---	GQPFQRQAMACLAS
R2Nasonia	---	TP I TPQEIMGR I RR I KND	---	SAAGPDGVTKDDL RGR	---	GVSIALSKLFN
Cin4	---	TM I NDDEIRNAVGMHSE	---	KAPGPDGFI GLFYKECFEVI	---	REDSLKAINDFYH
R1tarana	---	YAF AQVE I DAVCKSLPRK	---	KAPGEDRFTYE I VRGL	---	HEALPRLLGALFN
Mosqul-Aa2	---	INSPFRMEELNFALRHCKSK	---	SAGPDDLGYPLFQHLS	---	IVSKATLLDLLN

Y11i
BDDFcow
JAM1
INGI
L1Tc
SR2
R4
Zepp
Cn11
DualenU2
DualenU1
DualenCr3
DualenCr1
DualenCr4

-----SSFTKEE|FDT|KASTHN-----SAPGPDG|PYRFYRDC-----WDELGDLMTDVYN
-----QTSWNVKLRGALES|TMN-----KAGGGDG|PVELF-|LK-----DDAVKVLHS|CQ
-----PAPTMEVKA|IQQLKNN-----KATGKDG|GAEL|KMG-----PDRLAACLHRSDS
-----SP|ITMAELRRS|KLLPSG-----SAAGPDCLYNEALQHL-----G|ITALNVVLR|LFN
-----APFNRETELLAALRNTPYG-----KAPGPDVYSEALRH|-----SSKGLRFLLR|CIN
-----TDPPEAEVVRKELQLLKRY-----KSPGPDLPALFKDG-----GDFLAKELTVLFX
-----KADLEEKYEGA|IRRIQPW-----KAPGPDGLHAHWWKAL-----PSAKRLLGELVV
-----GSVVAELETALRSLPRG-----KAPGLDGLPYEFYLR-----WPVVGLELAGMLQ
-----GKAPD|DT|IQKALDSFKPD-----TAPGVSGWSVPLLKTAAK-----REPVKQFLQLLC
-----PY|YDRSTYNACVHFLGNN-----KKPGPDG|PNELLK|LP-----DYVHD|LFHLFA
-----QRVRDNVVTYQTCVNF|SNN-----KSPGPDG|PNELLR|VLP-----LP|H|I|G|H|T|M|F|I
-----PS|ADSANFDT|C|DHL|SRN-----KSPGPDG|PNELLR|ALP-----APMRTTVHNL|LT
-----PSMADTANFEQC|S|H|L|SRN-----KATGPDG|PNELLR|ILP-----SGMKRNLHC|ILQ
-----PNVSDASNFRQRCMQSLSRN-----KSPGPDGLPNELLK|CMP-----DALQAAVHTLLC

ldt
l-Dme1
You
cgt_1_3
mgr583
mars1
R1Dme1
R1Dyak
R1Dmerc
R1Sc
TRAS1
R1Bm
RT1
RT2
SART1
LOA
Lian
TRIM
BILBO
JockeyDme1
jockeydf
doc
F
CUTWORM
G
HelenaDyak
helenamau
BS
TART
AMY
JuanA
JuanC
strider
NCR1CTH
T1
Q
CR1
TurtCR1
SR1
Sam3
Sam6
Dong
DongAg1

E|F|N|S|-----H|P|Q|A|Y|K|T|S|L|I|P|I|L|K|P|N|T|D|K|T|-----T|T|S|Y|R|P|I|S|L|N|C|C|I|A|K|K|L|D|K|I|I|A|K|R|L|
E|F|N|S|-----H|P|Q|A|Y|K|T|S|L|I|P|I|L|K|P|N|T|D|K|T|-----T|S|S|Y|R|P|I|S|L|N|C|C|I|A|K|I|L|D|K|I|I|A|K|R|L|
Q|I|L|T|T|G|-----K|Y|P|H|T|W|R|S|A|I|I|P|I|S|K|P|N|K|P|P|S|D|-----I|N|S|Y|R|P|I|S|L|L|S|C|L|G|K|T|L|E|K|I|I|A|Q|R|L|
A|C|V|Q|T|G|-----Y|F|P|R|T|F|R|K|A|E|V|V|M|I|Q|L|G|K|T|D|F|S|K|-----T|G|S|W|R|P|I|A|L|L|S|C|L|G|K|G|L|E|R|L|I|A|K|R|M|
R|C|L|E|L|G|-----H|F|P|A|P|W|K|K|A|E|V|A|M|L|P|K|T|G|K|K|D|R|S|S|-----V|R|S|W|R|P|I|A|L|L|S|C|I|G|K|G|L|E|R|V|A|R|R|I|
T|V|L|N|L|G|-----Y|H|P|R|S|W|R|E|A|T|G|A|I|V|P|K|P|K|A|D|Y|T|-----A|V|K|S|Y|R|I|V|S|L|L|N|C|M|G|K|V|A|E|K|L|V|A|F|R|L|
R|C|I|R|L|G|-----Y|F|P|A|E|W|K|C|P|R|V|V|S|L|L|K|G|P|D|K|D|K|C|E|-----P|S|S|Y|R|G|I|C|L|L|P|V|F|G|K|V|L|E|A|I|M|V|N|R|V|
R|C|I|Q|S|G|-----Y|F|P|N|E|W|K|C|P|R|V|V|A|L|L|K|G|P|E|K|D|K|C|E|-----P|S|S|Y|R|G|I|C|L|L|P|V|F|G|K|V|L|E|A|I|M|V|N|R|A|
R|C|L|A|D|G|-----Y|F|P|T|E|W|K|R|P|R|V|I|A|L|L|K|G|P|D|K|D|R|S|D|-----P|A|S|Y|R|G|I|C|L|L|P|V|F|G|K|V|L|E|G|I|M|V|N|R|I|
Q|C|L|L|E|S|-----Y|F|P|Q|K|W|K|I|A|S|L|V|I|L|L|K|L|K|D|R|I|R|S|D|-----P|G|S|Y|R|P|I|C|L|L|D|N|L|G|K|V|L|E|G|I|M|V|K|R|L|
K|C|L|E|H|R|-----Y|F|P|K|I|W|K|A|A|T|V|V|I|L|R|K|S|G|K|D|S|Y|T|E|-----P|K|S|H|R|P|I|G|L|L|P|V|L|G|K|L|Y|E|K|M|L|V|A|R|L|
R|C|V|V|E|G|-----T|F|P|P|V|W|K|D|G|R|L|L|V|L|P|K|G|N|G|R|P|L|T|D|-----P|K|A|Y|R|P|V|T|L|P|V|L|G|K|I|E|K|V|L|L|Q|C|A|
S|C|L|E|T|A|-----T|F|P|A|P|W|K|R|Q|R|L|V|L|L|P|K|P|G|K|P|P|G|S|-----N|G|S|Y|R|P|L|C|M|L|D|A|L|G|K|V|L|E|K|L|I|L|N|R|L|
D|C|L|N|R|A|-----S|F|P|A|Q|W|K|R|Q|R|L|V|L|L|P|K|Q|G|K|P|P|G|E|-----S|S|S|Y|R|P|L|C|M|L|D|A|L|G|K|V|L|E|R|L|I|L|N|R|L|
R|C|L|R|E|G|-----R|F|P|E|E|W|K|T|G|R|L|V|L|I|P|K|E|G|R|P|R|D|Q|-----P|S|G|Y|R|P|I|V|V|L|S|E|A|G|L|L|E|R|V|V|A|G|R|L|
S|S|L|A|L|G|-----H|I|P|S|A|C|R|R|A|R|V|V|F|I|P|K|A|G|K|D|I|T|D|-----P|K|S|F|R|P|I|S|L|T|S|F|L|L|K|T|L|E|K|M|V|D|Y|K|I|
S|S|F|A|T|G|-----Y|I|P|K|S|W|R|D|I|T|V|M|F|I|P|K|G|G|R|A|S|Y|E|E|-----A|K|S|F|R|P|I|S|L|T|S|F|L|L|K|C|L|E|R|I|D|H|H|I|
-----G|-----S|S|P|D|T|W|L|Q|T|K|V|V|F|I|P|K|A|G|K|P|S|H|T|A|-----P|K|D|F|R|P|I|S|L|S|S|F|L|L|K|A|M|E|L|L|H|L|H|L|
K|I|L|T|V|G|-----K|I|P|R|A|W|L|K|A|K|I|V|F|I|P|K|A|G|K|P|S|H|T|-----P|K|D|F|R|P|I|S|L|S|S|F|L|L|K|F|E|R|L|V|G|L|Q|L|
S|V|L|D|V|G|-----Y|F|P|K|A|W|K|S|A|S|I|I|M|I|H|K|T|G|K|T|P|T|D|-----V|D|S|Y|R|P|T|S|L|L|P|S|L|G|K|I|M|E|R|L|I|L|N|R|L|
S|I|L|R|V|G|-----Y|F|P|K|A|R|P|T|A|S|I|I|M|I|L|K|P|G|K|Q|P|L|D|-----V|D|S|Y|R|P|T|S|L|L|P|S|L|G|K|M|L|E|R|L|I|L|N|R|I|
A|I|A|K|L|G|-----Y|F|P|Q|K|W|K|S|T|I|V|M|I|P|K|P|G|K|D|K|T|Q|-----P|S|S|Y|R|P|I|S|L|L|T|C|L|S|K|L|F|E|K|M|L|L|L|R|I|
A|I|T|K|L|G|-----Y|F|P|Q|R|W|K|M|M|K|I|I|M|I|P|K|P|G|K|N|H|T|V|-----A|S|S|Y|R|P|I|S|L|L|S|C|I|S|K|L|F|E|K|C|L|L|I|R|L|
A|M|S|R|L|C|-----F|F|P|P|Q|W|K|T|A|K|I|L|M|V|H|K|P|G|K|P|L|E|D|-----P|K|S|Y|R|P|I|S|L|L|P|V|A|S|K|V|Y|E|S|L|L|L|L|R|L|
S|C|F|R|L|G|-----Y|F|P|K|Q|R|K|-----A|E|V|I|T|I|P|K|P|G|K|P|E|A|N|-----L|A|S|Y|R|P|I|S|L|L|A|I|L|S|K|I|L|E|R|V|L|R|R|V|
A|I|L|R|V|Q|-----V|F|P|R|Q|W|K|M|A|V|I|M|I|H|K|P|G|K|P|E|A|D|-----P|E|S|Y|R|P|I|S|L|L|P|S|L|S|K|L|W|E|R|L|L|V|K|R|I|
A|I|L|R|I|Q|-----V|F|P|R|Q|W|K|M|A|A|I|L|M|I|H|K|P|G|K|P|E|D|D|-----P|E|S|Y|R|P|I|S|L|L|P|S|L|S|K|L|W|E|R|L|I|A|N|R|I|
A|I|L|R|V|Q|-----F|F|P|K|Q|W|K|M|A|A|I|L|M|I|H|K|P|G|K|P|E|E|S|-----P|E|S|Y|R|P|I|S|L|L|S|S|L|S|K|L|W|E|R|L|I|A|N|R|L|
S|I|L|R|L|G|-----Y|Y|P|E|A|W|K|H|A|Q|V|K|M|I|L|K|P|G|K|S|A|N|E|-----P|R|S|Y|R|P|I|S|L|L|S|G|L|S|K|I|F|E|R|L|L|K|R|L|
A|A|M|A|N|C|-----I|F|P|A|V|W|K|E|A|D|V|I|G|I|H|K|P|G|K|P|K|N|D|-----P|T|S|Y|R|P|I|S|L|L|S|L|G|L|Y|E|R|L|L|Y|K|R|L|
K|C|F|Q|L|A|-----Y|F|P|D|K|W|K|N|A|K|V|V|P|I|L|K|P|D|K|N|P|A|E|-----A|S|S|Y|R|P|I|S|L|L|S|S|I|S|K|L|F|E|K|V|I|L|N|R|M|
K|C|F|D|L|A|-----Y|F|P|S|S|W|K|N|A|K|V|I|P|I|L|K|P|D|K|N|P|A|E|-----A|S|S|Y|R|P|I|S|L|L|S|S|I|S|K|L|F|E|R|I|I|L|N|R|M|
H|C|L|Q|A|G|-----Y|F|P|R|D|W|K|I|A|K|I|V|P|I|L|K|P|G|K|P|P|D|N|-----P|E|S|Y|R|P|I|S|L|L|S|G|L|S|K|I|E|K|L|I|K|L|R|L|
S|C|L|K|L|N|-----H|F|P|K|V|W|K|H|A|K|V|I|P|I|P|K|P|G|K|P|T|N|E|-----V|S|S|Y|R|P|I|S|L|V|S|S|I|S|K|I|L|E|R|I|L|L|N|R|I|
L|S|L|S|L|G|-----V|F|P|A|L|W|K|S|C|W|L|F|P|V|H|K|G|C|R|S|I|-----V|S|N|Y|R|G|I|T|Q|T|C|A|T|A|K|T|F|E|L|C|I|F|P|T|I|
A|S|L|A|N|G|-----Y|F|P|K|A|W|K|R|S|W|M|V|P|I|Y|K|K|G|D|R|T|D|-----A|I|N|Y|R|G|I|T|S|L|C|A|I|A|K|V|F|E|L|V|I|Y|K|N|L|
K|S|W|L|S|G|-----E|V|P|D|D|W|R|K|G|Y|V|T|P|I|Y|K|K|G|S|K|E|D|-----P|G|N|Y|R|P|V|S|L|T|S|V|P|G|K|I|M|E|Q|I|L|L|D|D|M|
X|S|W|R|L|G|-----E|V|P|D|D|W|K|K|A|N|I|V|P|I|F|K|K|G|K|E|D|-----P|G|N|Y|R|P|V|S|L|T|S|X|P|G|K|I|M|E|Q|V|L|K|E|S|I|
H|S|L|S|R|G|-----K|L|P|E|I|W|K|L|A|H|I|T|P|I|F|K|G|G|R|R|S|E|-----P|S|S|Y|R|P|V|A|L|L|S|I|P|S|K|I|M|E|S|I|Y|D|G|I|
E|S|Y|A|S|G|-----Q|F|P|E|I|W|K|S|T|I|V|P|V|H|K|G|C|R|T|D|-----A|N|N|Y|R|P|I|S|L|T|H|P|L|S|R|V|F|E|K|I|V|E|K|L|
E|F|L|S|T|K|-----T|F|P|V|C|W|K|E|S|T|V|V|P|I|F|K|K|G|N|A|S|D|-----P|E|N|Y|R|P|I|S|L|T|H|P|L|S|R|L|F|E|K|L|V|L|Q|S|I|
D|I|S|G|N|-----Q|S|I|P|E|F|I|A|T|G|I|T|Y|M|I|P|K|G|D|F|S|I|E|-----A|S|Q|Y|R|P|I|T|C|L|P|T|I|Y|K|I|L|T|T|V|I|T|K|K|I|
T|V|L|E|D|S|-----R|K|L|P|K|F|I|T|G|G|V|T|Y|F|L|P|K|D|Q|N|T|K|N|-----P|A|K|Y|R|P|L|T|C|L|S|N|L|N|K|V|L|S|S|V|I|T|Q|K|V|

Rex6Fr
Rex60l
EhRLE1
EhRLE2
EhRLE3
NeSL
YURECi
R2Ci-D
R2Am
R2Dr
R2Ci-A
R2Ci-B
R2Ci-C
R2Sciara
HERODr
HEROTn
HEROFr
RTE1
RTE2
R2Dmel
R2Dsim
R2Dyak
R2Dmerc
R2ear
R2Fa
R2Bm
R2is
L1rat
L1Mm
L1dog
L1hs
swimmermedaka
swimmerpupfish
SWDr1
Ta11
ATLN60
KoshiFr1
KoshiTn1
KoshiFr2
KoshiTn2
KoshiDr1
KoshiDr2
Tx1L
MutsuDr2
MutsuDr3
MutsuDr1
DewaDr1
KenoDr1
TRE3-B
TRE3-A
TRE3-C
TRE5-A
Zorro-1
Zorro-3
slacs
CZAR
CRE1
CRE2
GiIM

QLLTSG---NHPEWLTQGRITGLIMKDPQKGT---IPSNYRPITCLSTTWKLLSGILAAKI
QLLRDG---THPEWLTGRTILIQKDPLKGA---VPSNYQPI TCLSTTWKLMMSGI IATKI
EWLNFP---ENIPLDMVSGRTLLIHK-LDRND---VTNYRHSCTNVIMKVFTSILKEKI
EWLDTP---ENIPIEMLTGRTILIHKGGDSKK---AENYRPITCLNVIMKIFTSIINRKI
EWLNPN---NEILLHFIQGRITL IYKKGDKLD---TQNYRPI TCLNCLLKVYTSILKMKI
EQQRHR---KIPKHWEAETILLFK---NGD---QSKPENWRPISLMPVIYKLYSSLWNRR I
IVRRHG---RIPGAWPTCSVILLCKDAQGD---VQDVGNWRPITICRTLYKLYAAVIARRI
VWQFTG---RTPRWTKENRTTIIAKSASA---AEDVGDWRPITIGSHVVRLYAKLLSRRL
LFLLEE---KLPAFLMTSRTVLVPKVKEP---KAPT-DYRPI SVSSTLVRLFHKILARRL
MWWFTG---VIPSRLLKKSRTVLLPKSSDPGA-EMEI GNWRPITIGSMVLRLFTRVINTRL
LWLLAG---YQPKALRMGESCLIPKVKDA---SRPQQFRPITLGSYVGRCLHKCLASRF
LWL YAG---YQPEGLREGITTLIPKIKGT---RDKAKLRPITVSSFCRIFHRCLAQRM
LWLLTG---YQPKSCRLGRTILIPKEPGT---RDKAKHRPITINSLLRFCFHKILSNRI
IFVFG---RVPSPIKGRTVFTPKIEGG---PDPGVFRPLSICSVILREFNKILARRF
VIWRRG---KIAQPWRYAEGVYIPKEEKS---ENIDQFRVILLSVESKIFFSIVAKRL
VIWRRG---KVAHQWRWAEGVWVPKEEKS---TLIEQFRTILLSNVEGKIFFSILSHRL
VIWRRG---RVTTQWRSAEGVWIPKEEDA---SKIEQFRILLSLVEGKIFFKIVSQRL
RYLHSR---NVPKPWKTSKTTLIFKKGRENL---ENYRPI CLLPVLYKVF TKCLLNRM
NILQHN---KVPDLWKISDVKLIPKAKATK---IKDFRPI SLLPILSKMFSSILTRRL
LILWCG---NLPHSIRLARTVFIKTVTAKR---PQDFRPI SVPSVLRQLNAI LATR
LILWCG---NLPHSIRLARTVFIKTVTAKR---PQDFRPI SVPSVLRQLNAI LATR
LILWCG---DLVPFRMARTIFIPKTVRANR---PQDFRPI SVPSIVVRQLNAI LATR
LLMACG---KMPDSFLESKTTLIPKKNSTE---PGDFRPI TVQSVLRQLNKILAARV
LLMACG---KMPDSFLESKTTLIPKKNSTE---PGDFRPI TVQSVLRQLNKILAARV
AWMARG---EIPILRQCRTVFPKVERPGG---PGEYRPI SIASIPLRHFHSILARRL
GLWT---HVPESLYKGRITLIPKKSLEL---AGDFRPI CVLPVVVRLHRILAKRL
KIETDG---ALPNSFYEATITLIPKPKDPTK---KENFRPI SLMNINAKILNKILANRI
KIEVEG---TLPNSFYEATITLIPKPKDPTK---IENFRPI SLMNIDAKILNKILANRI
KIERDG---VLPNSFYEASITLIPKPKDPTK---KENYRPI SLMNMDAKILNKILANRI
SIEKEG---ILPNSFYEASITLIPKGRDPTK---KENFRPI SLMNIDAKILNKILA-KI
WVMEKK---TTPLSWNKAIISIIPKEGKDRLD---CANYRPVSVLNIDYKLFTSISRRL
WVMEKK---VIPSSWSEAIISIIPKENRDKLE---CSNYRPI SVLNIDYKLFTSILSKRL
ESSVTG---SLPETMNAIISLIPKDKNPSE---CSSYRPI SLLNVDKILFAKILANRL
NFFLLG---YFPKSWNFTHLCLLPKPKKPKD---MTDLRPI SLGSLVYKISKIMVRRL
SFFVDS---CLSPRLNETHVTLIPKISAPRK---VSDYRPI ALCNVQYKIVAKILTRRL
ESLASG---SLPLSNRRTVVTLPPK-----
ESLSSG---SLPVSCRRAVMALLPKKGNLQD---IRNWRPVSLLCDYKILSKVLATRL
ESWRTG---LLPRSCRRAITLTPKKGDLQD---LKNWRPVFLLCGDYKILSKALIRL
DSLRTG---RLPLSCRRAVITLTPKKGDPQE---LKNWRPVSLLCDYKILSKALALRL
ESLAYG---QLPLSCRRAVITLTPKKGDLND---IKNWRPVSLLCDYKILSKVLANRL
ECMCKK---ILPVSCQRAVITLTPKKGDLTL---LKNWRPVAVLCSEYKIIAKCLSNRL
EAFKKG---ELPLSCRRAVITLTPKKGDLRL---IKNWRPVSLLCDYKIVAKISLRL
DIFKCK---EMNERMGMLMKLIYKRKGAKT---ELQNYRPI TMLNTDLKILAKVLANRL
EILQKE---ELNERMGMLMKLIHK-KGEKT---LLKNYRPI TMLNTDLKILTKILANRL
EIFENG---EINRKMGMMLMKVIYKKGDKV---DLKNYRPI TMLNTDLKILAKVLANRL
AIFKKG---QLSESMKKGMIKIYKNKGDKD---YLQNYRPLSMLNTDYKILAKILANRL
EFENFN---KLPADFRLGIVSLLFK-KDDKT---ILKNWRPITLNTDYKFFTKILATRM
DILENP---HHITTEFTEGLIHTIYK-KGNPL---LISNRRPITLNTDYKILSKVINARL
DTLRNP---HLISKNYEGLIITIPK-KGDPE---LIKNNRPITLANCIYKIHSKLINNR I
DLLTNK---KEIPTKFKEGVITTFK-KGDEL---NISNRRPITLNTDYKILSKILNSRL
HFWN---TTPKDFKQGLITLIPK-KGDPN---NLDNYRPI TLLNVDYKIYSKILNNRI
HIRS-T---GNLPPDFKILITLIPK-TTKSD---YISDTRPI SVINVGRLISAVMNNKL
NILK-Y---GTLPPQMSSEVITLIPK-KLKT-----IENFRPI SVISCAVRLSSVIEKQL
DINADVSMVEVGRRLQATSLTVLRKPNKG-----YRPI GAESVWAKLASHIAISRV
DMANGNVAPEVAHRLRATNLTVLRKPNKK-----FPPIGAECVWAKIISLMAVDV
DIMQGVAEVVARRLRSSAVTPIPKDEAGTK-----IRPI VPESWAKLKLASLVAMAEI
DMLVGNVHPSFATRIRACILHPFRKEAGSAK-----VRPI TPESALMKLAAHIALDSV
TTLFSSRNWAQLQPLCEFRLLKLLPKSGGR-----WRPI AVQETLLVAFHRLLRRT

GiIT	AGLLATRDWQGLKPLAEFRLKLLPKPNGK-----WRP I A I QETLLVAFHRA I LKQT
BGR	CVWQTG---AFPNSWRKATV I P I PKPGRDGS---PANYR P I A L T S C I C K T M E R M I N S R L
Tad1	ASLRLG---HFPQRFKDAKVVVLKPKGKSAQQKLAGAWR P I S L L S N V G K I L E A L V A K R L
R2Nasonia	S I L L A G --- Y Y P K A W R E N R T T L L P K P E K D P A D --- V K N W R P I T I S S M V S R V Y S G L L D Q R V
Cin4	HKCKSL---HLVN---EAN I V L L P K R E N P D R --- I D L F R P I S L I N S C M K I I T K I M A T R L
R1tarana	RCLSLK---VFPNEWKKGELALLAK I G K D V - N R --- P N A Y R P I C L L P A L G K I Y E K L I V N R L
Mosqul-Aa2	KTWIEN---TLPKSWTHSLVVP I P K H G K A A T S --- P G D F R P I S L T C C A S K I L E R M V N R R L
Y11i	EAGADS---P I S T E R N T A I I K L L Y K S G D Q A D --- I S N Y R P I S L I N T E V K I Y T Q L I N K A I
BDDFcw	Q I W K T Q --- Q W P Q D W K R S V F I P I P K K G N A K E C --- S N Y R T I A L I S H A S K V M L K V L Q A R L
JAM1	Q Q S G K S --- E Q L P E E W K Q G V I C P I Y K K G D K L E C --- E N Y R A I T I L N A A Y K V L S Q I L F R R L
ING1	E S L R T G --- V V P P A W K T G V I P I L K A G K K A E D --- L D S Y R P V T L T S C L C K V M E R I I A A R P
L1Tc	H S W T T G --- T I P V E W R R A T I V P L L P K G K S P E L --- L E S Y R P I S L T S I V S K V A E K M V L K R -
SR2	K V W E Q E --- S V P T S W N E S I V V P I F K K G S R C S --- C N N Y R G I S L L S I A S K L L A S X I L R R L
R4	D W L T T G --- K V T T G W M C R G R T I L I P K K G D R G D --- P S N Y R P I T C L N T C Y K V L T S V M N S V I
Zepp	E A F G G G --- R R C P P - L T Q G R I T L L Y K G K A D R E S --- L A S Y R P I T L L N T D Y K L A A R A I A S R I
Cn11	A A I A N N --- T A P G R S M L R T S R L I P L K K D D G S --- I R P I A V G E L I Y R L C A K A L I I S H
DualenU2	I M A I T K --- Q T P D A W K H S Q T I L L Y K K G D P T N --- P G N Y R P I G L A N T V Y K L W T S T L T S V X
DualenU1	T M A L L G --- H T P D S W K H S N T V L L Y K K D D P M D --- P G N Y R P V G L A N T M Y K L W T S M L T T V M
DualenCr3	L M W V R A --- H T P T S W T A S E T V L L P K P G D S L L --- L K N Y R P I A L A N T T Y K L W T S L I T V A I
DualenCr1	I M Y V K S --- Q I P E T W A A S E T V L L P K P G D A L D --- I K N K W P I A L A N T C Y K L Y T S M L T L G I
DualenCr4	V A W I K A --- E L P D G W S T S D T I L L Y K K A D P L S --- I S N Y R P I A L C N T L Y K L Y T S L V T R A A

ldt	W W L V T --- H S N L L S E N Q F G F K K G - K S T S D C L L Y V D Y L I T K ---
I-Dme1	W W L V T --- Y N N L I N D K Q F G F K K G - K S T S D C L L Y V D Y L I T K ---
You	T W F I K --- R H N L I S H N Q V A F K S N - H S T M D A L L R I Q H F A S N ---
cgt_1_3	A Y L T I --- L E G V A S P Q Q V G A L P G - R A A V D L T T C L T H E I E R A L D ---
mgr583	A W A I H D N --- G L L S C T H G G A L P K - R S A T D L V C A L A H D I E Q A L A R ---
mar s1	A Q L C E --- D K S L L H T G Q M G G R K H - R S S Q D A V M A L V H D I E L G W S ---
R1Dme1	R E V L P E --- G C R - W Q F G F R Q G - R C V E D A W R H V K S S V G A S A ---
R1Dyak	R E V F P E --- G C R - W Q F G F R Q G - R C V E D A W R L V K S S V E P S P ---
R1Dmerc	K E V L T D --- E S R - W Q F G F R P G - R C V E D A W S H V V S S V E A S A ---
R1Sc	D Q K L M D --- V E S P Y Q F A F T Y G - K S T E D A W R C V Q R H V E C S E ---
TRAS1	K Y H L L P --- R M S T R Q F G F M P Q - R S T E D S L Y T L M Q H V K E K L K ---
R1Bm	P G L T H --- S I S P R Q H G F S P G - R S T V T A L R T L L D V S R A S E ---
RT1	H N H L E D P --- A A V R L S D R Q H G F R R G - R S T I G A I R T V I E A G Q S A M R F R R T N G ---
RT2	N E H L E E P --- S S P R L S D R Q F G F R R G - R S T V S A I Q R V V E A G R T A M S F R R T N G ---
SART1	V R H L E N --- V G P N L A D S Q Y G F R R G - R S T L D A V Q R V R D L S D Q A C S ---
LOA	R S T L L K Q --- R - P L H P A Q H A Y R V G - R S T D T A L Y Q L Q R T L S A A I D Y ---
Lian	R D V Y L A N --- M P L H V N Q H A Y Q S G - K S T V T L L H K V V Y D I E K A F A Q ---
TRIM	T A C I P S S --- I S D S Q H A Y R K G - R S T E T A L H S I T S I I E A S L N F ---
BILBO	R T T I N P --- Q W L S G A Q H A Y R K G - K S T E T A L H E V I S A V E K S L H V ---
JockeyDme1	L T C K D --- V T K A I P K F Q F G F R L Q - H G T P E Q L H R V V N F A L E A M E ---
jockeydf	L T S E E --- V T R A I P K F Q F G F R L Q - H G T P E Q L H R V V N F A L E A L E ---
doc	S P H L R --- I N N T L P T H Q F G F R E K - H G T I E Q V N R I T S E I R T A F E ---
F	N Q H Q T - T --- Y H N I I P A H Q F G F R E S - H G T I E Q V N R I T T E I R T A F E ---
CUTWORM	L P I K --- E K K L I P D H Q F G F R Q K - H G T I D Q V H R L V S K I H N T F E ---
G	L P V L D --- E A G L I P D H Q F G F R R S - H G T P E Q C H R L V E Q I L E A F E ---
HelenaDyak	N D I V R --- Q G N I L P D H Q F G F R K G - H G T V E Q V H R L V K H I L Q A L D ---
helenamau	N D I I R --- Q G N I L P D H Q F G F R K G - H G T I E Q V H R L V K H I L Q A F D ---
BS	N D I M T --- E R R I L P D H Q F G F R Q G - H S T V E Q V H R L T K H I L Q A F D ---
TART	F K V D L --- F K K A I P L H Q F G F R K E - H G S E Q Q I A R V T Q F I L E A F E ---
AMY	R D F V S - S --- K G I L I - D E Q F G F R T N - H S C V Q Q V H R L T E H I L V G L N ---
JuanA	M A H I N --- E N S I F A N E Q F G F R H G - H S T T H Q L L R V T N L T R A --- N K S ---
JuanC	M T H I N --- E N S I F A D E Q F G F R L G - H S T T H Q L L R V S N L I R S --- N K S ---
strider	V K F L D --- I H N T L P T V Q Y G F R N G - L N T I L P T L K L R N Y I K E S --- I Q S ---
NCR1CTH	N D H L E --- D N N I P N Q Q C G F R T G - R S T S H Q L I K V I K T A K E --- N I N ---
T1	L H S C S --- S A I S P K Q H G F M P G - R S T S T N L M S F V T N I F R S F E ---
Q	L H A C R --- S Y L S P Y Q H G F V P K - K S T T T N L V E F V T Y C T S Q I D ---

CR1	LDHMR-----	NERVIRDSQHGFRG	RSCLTNLVAFYDGV	TALVD-----			
TurtCR1	LRHLE-----	ERKVIKXSDHGFTK	KSCLTNLAFYEEVT	GSVD-----			
SR1	LEYLS-----	SSKFFSPQQHGFRK	G	HSCMTNLLTAVDRW	TILD-----		
Sam3	RKECS-----	SKISKSQFGFMNS	RSCTLALLNACSK	ILDSL-----			
Sam6	KKTC-----	NKLSKIQGFLLN	RSCTLAHLNSSTF	CHSILS-----			
Dong	NSHIE-----	HNNILAEEQK	G	CRRG-HMGCKEQL	IID-STIMKHATT-----		
DongAg1	KDHCD-----	TNNVMTEEQT	G	RRRKN-TQGCKDQV	IID-AVIVGQAAK-----		
Rex6Fr	SRHMD-----	PYMSRAQK	G	IGKN-TRGAKHQLQ	VDWAIAQDCRTR-----		
Rex601	NRYMD-----	QFMSNTQK	G	IGRD-SRGAHQLLV	DRTVAQDCKSR-----		
EhRLE1	HRRLNMNCE	SLKISNNQL	G	CKLQ-SLDAKEGMR	NSYMMKHQKEEK-----		
EhRLE2	EEQLANNEEKYQ	INKSQY	G	NKKR-SLAAKEVN	INSLLERNEREVQ-----		
EhRLE3	ENQLMLNP	IEKQLSLNQI	G	CKKY-TYASKEGL	LYNTINQLLLKT-----		
NeSL	RAVPN-----	VLSKCQR	G	FQER-EGCNESLA	ILRTAIDVAKGKR-----		
YURECi	QTWAKQ-----	GGVLSRLQK	G	FMPV-EGVFEHVF	MMLDTVLSDAKLRR-----		
R2Ci-D	GSCVQ-----	LNLQCR	A	FRDV-QGCAENVM	LLSGMIRDAKARS-----		
R2Am	TLASG-----	LDSRQR	G	FVPV-DGCAENLV	LESAIRSAKNYK-----		
R2Dr	TEACP-----	LHPRQR	G	FRRS-PGCSENL	EVLECLLRHSKEKR-----		
R2Ci-A	ERDLP-----	ISIRQK	A	FRCM-DGVAENVM	ILRSVLDHKKRL-----		
R2Ci-B	ETSLP-----	LGERQK	A	FRKV-DGICHN	WLSRSLIHNSKDNL-----		
R2Ci-C	MKLIP-----	LSPQK	A	FRPG-DGIAEH	WNLRHILNQHKLEK-----		
R2Sciara	VSCYT-----	YDERQT	A	YLPIDGVC	INVSMLTAIAEAKRLR-----		
HER0Dr	SNFLLS-----	NKYIDTSMQKGG	IPGV	PGCLEHTGVVTQ	LIREAREGR-----		
HER0Tn	SDFLLK-----	NQYIDSSVQKGG	IPGV	PGCLEHCGVVTQ	LIREAREGR-----		
HER0Fr	TDFLLK-----	NNYIDTSVQTGG	IPGV	PGCLEHNGVVTQ	LIREAHESK-----		
RTE1	RRSLD-----	EAQPEQA	G	FRRS-FSTIDH	IHSLQRLLLEVGRE-----		
RTE2	TPTLES-----	YLDESN	G	FRKG-RCCADN	IQSLTMLIEKCNE-----		
R2Dmel	NSSIN-----	WDPRQRGFLPT	D	G	CADNATIVDLVLRHSHKH-----		
R2Dsim	NSSIN-----	WDPRQRGFLPT	D	G	CAYNATMVDLVLHSHKH-----		
R2Dyak	TSSID-----	WDPRQRGFSP	T	D	G	CADNATIVDLVLKSHKY-----	
R2Dmerc	TAAVS-----	WDPRQRGFLPT	D	G	CADNATIVDLVLRDHHKR-----		
R2ear	AQHIP-----	LDERQRGFRPV	D	G	VAHNIFELDMILRCHRSE-----		
R2Fa	AQHIP-----	LDERQRGFRPV	D	G	VAHNIFELDMILRCHRSE-----		
R2Bm	LACCP-----	PDARQRFICA	D	G	TLENSAVLDAVLGDSRK-----		
R2is	AIVQH-----	TEFQAGFQSG	R	S	TSENIFLLRTILESLPAG-----		
L1rat	QEHIK-----	TIHHDQVGF	IPG	M	QGFNIRKTI	INVIIHYINKL-----	
L1Mm	QEHIK-----	AIHDPQVGF	IPG	M	QGFNIRKSI	INVIIHYINKL-----	
L1dog	QQYIK-----	KIHHDQVGF	IPG	T	QGFNTRKTI	INVIIHISKR-----	
L1hs	QQHIK-----	KIHRDQVGF	IPG	M	QDFNMHKS	INVIIQHINRT-----	
swimmermedaka	ETILP-----	MLIHKDQGTG	IKQ	R	QTQDSIRKVLHI	IHQVVQQ-----	
swimmerpupfish	EIILP-----	DLINKDQGTG	IRQ	R	QTQDNIRKTLHI	IMKYVSQH-----	
SWDr1	EIVLP-----	TIVSGDQGTG	IKN	R	YSFYNIRLLN	ILHHTPS-----	
Ta11	QPFLP-----	DLVSPNQSAFVAE	RL	I	FDNILAHEVVHGL	RTHKS-----	
ATLN60	QPWLS-----	ELISLHQSAFVPG	RA	I	ADNVLITHEILHFLRV	SGA-----	
KoshiFr1					VLEVSSS-----		
KoshiTn1	REAME-----	EVIHRDQTYCVP	G	RS	IVDNVHLIRDVLK	TSSL-----	
KoshiFr2	REAMA-----	EVIHVDQTYCVP	G	RR	ICNNINLIRHVLD	ISSS-----	
KoshiTn2	REVMS-----	SIVHPDQTYCVP	G	RL	ISDNVPLIRDILEL	SSS-----	
KoshiDr1	SDVLS-----	HIHDPQSYCVP	G	RR	IFDNISFIRDILD	IGKI-----	
KoshiDr2	NNVLH-----	EIHKQSYCIK	G	RS	ILDNLHLVRDVYD	FAFK-----	
Tx1L	KSVLA-----	EVIHDPQSYTV	PG	RT	IFDNVFLIRDLLH	FARR-----	
MutsuDr2	KEVMS-----	KLKSNQAYAIK	G	RD	IADVTMSIKSTID	YLQE-----	
MutsuDr3	KEVMP-----	KIKTTQAYAIK	G	RD	IADITMSIKDIE	YMK-----	
MutsuDr1	KEVMP-----	SIKTNQAYSIK	G	RD	IADTTMSIKDIT	RYIND-----	
DewaDr1	KKVVP-----	TLITTNQAYG	VI	G	RD	IADTVTSIRDLI	WYIKE-----
KenoDr1	STVLE-----	DVIHDPQACAV	PG	R	KITDLSLLIRDA	ICYARD-----	
TRE3-B	LRILP-----	FIIINNQTGFV	PH	RF	IDNINI	NELINYLKSKNLP-----	
TRE3-A	IPILT-----	KVINHNQKGFV	PG	RF	ILHNI	SINELINYCNDKR	IN-----
TRE3-C	LDITS-----	KIINKFQNGFV	PG	RF	IQDN	IQIMKEVIEISN	KRKN-----
TRE5-A	LKLLN-----	KISPFQTFV	PR	R	LLHDNI	ITLNSTIEIKRE	INTKE-----

Zorro-1	QQIME-----SHWDHDQHAFIKN-RSIQD---IVEKFAITWERVKRWT-----
Zorro-3	NPVLA-----KVIKQTQTGFLKE-RSISNSIYLLDMVLTRYQTSKTAD-----
slacs	MKTAE-----KKFSGIQFGVGG---HIEEAIAKIRKDFATK-----
CZAR	MPALK-----TCFKNLQYGVGN---NIELAIQKIRRDFHLK-----
CRE1	PSSFK-----ETFKGWQYGVWG---DVAKAVAKIRRDSEEH-----
CRE2	EKSFR-----STFKGWQYGVWG---DSTEAVKRIREAYEAS-----
GiIM	PALRK-----LPAWQLAFEH-----LAQMKAI RAAEELKRT-----
GiIT	APLKK-----LPSWQLAFEQ-----MAHVKAISRAEELKAS-----
BGR	VWYLE-----RNKVISNYQCGFRQG-RTTTDHLVRL EAYIRNALL-----
Tad1	TQAAE-----EFNLLPEGQMGNRAG-RSTEF AVRVTDAVHTAWK-----
R2Nasonia	RAVIK-----QCDRQKGFTEE-NGCFSNIQLLDDAVSNAKKAG-----
Cin4	APRMN-----EIVSTTQNAFIQK-RSISHDNFLYVQKVIKKL-HKS-----
R1tarana	WHFVTI-----NKALSDNQFGFVPY-RSTTMAIDKLLGTRHFEDER-----
Mosqul-Aa2	IRFLED-----NQFLDHRQHAFRPG-HGAETYFTGLGDVLQDAMGKG-----
Yili	QNILP-----DSIHGAQNGFVPG-RHITNNLDTMDHFCNAYSQNL-----
BDDFcw	QQYVN-----RELDPVQAGFRKG-RGTRDQIANICWIMEKARE-----
JAM1	LPIAN-----EFVGSYQTGFIG-RSTMYWIFSVRQILQKCREY-----
ING1	RDTVE-----SQLTPQQSGFRPG-CSTLEQLLHVRAALCHHT-----
LITc	-LLWV-----WTPHPHQYAYRSM-RTTTMQLAHLIHEVEHNRNHYFQVSLPKKSGIG-
SR2	FKTRER-----LREEQAGFRSG-RGCIDHIFTLRQMLEHRHTYR-----
R4	LSHLS-----RGEALPMNQRAMRKREWGCTHAMVLDRAMVMDAMAQ-----
Zepp	GPLLN-----QVVDATQTGF LPK-RWAGDNVLAHLEESYLEA-----
Cn11	FQPDF-----LLPFQLGVKSI---GGVEPIVRLTERVLEGSAG-----
DualenU2	TNYAEEHN-----MLSNGQEGFRKQ-RNTARQLHNM IHALEDAAITG-----
DualenU1	TEYAEHY-----AILSSCQEGFRKH-RNTSRQIHNL IHI LEDAALT-----
DualenCr3	SDISQD-----LDIFSETQEGFLRY-RNTERQTLNLVHALEDAGLT-----
DualenCr1	GELAG-----PLQLFSEAQEGFCAY-CNTERQVLNLVHALEDAALFG-----
DualenCr4	TEACT-----ELLVHSEAQEGFQKY-KGTERQIMNLLHVIDEAALT-----

ldt	-----SKMHTSLVTLDFSRADFDRVGVHSI IHLQEWK---TGPKIINYIQNFMINRK---
I-Dmel	-----SKMHTSLVTLDFSRADFDRVGVHSI IQQLQEWK---TGPKI I KYIKNFMSNRK---
You	-----ALSTKNHVSILATDFERAFDRVGIHAVLCRLERWG---IGPRLYNIKAFMTNRS---
cgt_1_3	-----LGLTATLVTMDVKGAFDSVLRNRLIIRLRQQG---WPNSLLRLI KFTFASSRT---
mgr583	-----GEEVTLVACDVQGAFDALLHGRLIRKMRSLG---FSKMLLRVFINFLSGRQ---
mars1	-----RGLTSSALLLDVKGAFDNVSKVRLLES-SGMR---IPKPLVEWVSSFMSDRLI---
R1Dmel	-----AQYVLGTFVDFKGAFDNVEWSAALSRLADLG---CREMG---LWQSFFSGRRA---
R1Dyak	-----AQYVLGTFVDFKGAFDNVEWSAALRRLADLG---CREMS---LWQSFFSGRRA---
R1Dmerc	-----AKYVLGVFIDFRGAFDHVEWDAALRRLSDLG---CREVG---IWRSFSDRK---
R1Sc	-----MKYVIGLNI DFQGAFDNLGWSMLLKLDEAQ---SNEFG---LWMSYFGGRK---
TRAS1	-----EKRIITIVSLDIEGAFDSAWWPALEVLRAEEK---CPEYLRRV I SSYLSDRR---
R1Bm	-----QRYVMAIFLDISGAFDNAWPPMIMVKAKRN---CPPNIYRMLTDYFRGRR---
RT1	-----RDNRFLLVSMVDKNAFN TASWQAIATALQMKG---VPAGLQIRVRSYFENRELV---
RT2	-----RDNRFLLVVALDVKNAFN TANWQSIASRLQAKG---VPVGLQRMLRSYFEDRVLY---
SART1	-----RGGVLLAVSIDISNAFNTPWSTILESLRFHR---VPTGLRNLIEDYLAGRAVV---
LOA	-----KEVALCAFLDIEGAFDNTSHDAIKDTLSRRG---LDPTTSRWI LALLRSRQ---
Lian	-----KQSCLGVFLDIEGAFDNVSFDAILEAARNHG---LPTMITNW I HQMLKNRH---
TRIM	-----KEYTLVAFLDIKGAFNNILPTAITGALTDLG---VDSRTVSLIQMLQCRT---
BILB0	-----KEYSLIAFLDIEGAFNNVIPGAI TEALTDLG---VDRHLVMLIQMLLCRT---
JockeyDmel	-----NKEYAVGAFLDIQAFDRVWHPGLLYKAKRL---FPPQLYL VVKSFLEERT---
jockeydf	-----KKEYAGSCFLDIQAFDRVWHPGLLYKAKSL---LSPQLFQLIKSFWEGRK---
doc	-----HREYCTAIFLDVAQAFDRVWLDGLLFKIKL---LPQNTHKLLKSYLYNRV---
F	-----YREYCTAVFLDVSQAFDKVWLDGLMFKIKIS---LPESTHKLLKSYLYDRK---
CUTWORM	-----DKEYCAAFLDISQAFDRVWHEGLLYKIKNS---FPSNMFLILKSYLRDRY---
G	-----RKQYCCAVMLDVKQAFDKVWHPGLHYKIKTH---LPGSHFAFLKSFTEGRE---
HelenaDyak	-----DCEYSNAVFI DMQQAFDKVWVHVGLLCKIKTM---LPAPYFCILKSYLEGRE---
helenaau	-----DCEYSNAVFI DMQQAFDKVWVHVGLLCKIKTL---LPEYFCILKSYLEERQ---
BS	-----DKEYCNAVFI DMQQAFDRVWHDGLISKVKKL---FPAPYYGLKSYLEDRR---
TART	-----RKEYCSAVFLDISAFAFRVWHEGLLLKLAKI---LPYNLYIILESYLTNRT---

AMY	-----RPKPLYTGALFFDVAKAFDKVWHNGLIFKLFNM-G-VPDSLVLII RDFLSNRS---
JuanA	-----EGYSTGLALLDIEKAFDSVWHEGLIVKLKNFN--FPTYIVRIIQSYLSNRT---
JuanC	-----EGYSTAPALLDIEKAFDSVWHKGLIAKLKRFN--FPIYIVKIIQNYLTDRT---
strider	-----KQSVGLVTLDIEAAFDTVWHDGLLHKLKMI G--TPIYLIKIQNFLT HRY---
NCR1CTH	-----NKKSTGMI FL DVEKAFDRVWHNGLLYKMLKLR--FPLPLIKTVRSFLSERT---
T1	-----AGTQLDAIYTDLFAAFDSLPHSLLLAKLSKLG--FGDGIISWLSYLSNRS---
Q	-----AGAQVDAIYTDLKAAFDSLPHAILLAKLDKLG--IPSPLVQWLKSYLIHRT---
CR1	-----EGKATDVIYDLTKAFDMVPHHILISKLEGGC--FDGWTTWHIRNWLKGRR---
TurtCR1	-----VGKAVDVIYLDFSKAFDTVSHSILISKLKYG--LDEWTIKWLENWLXHRA---
SR1	-----RKGVKVDVIYLDKAFDRVNHICLIKLRRLG--IKPPLIDWLSYLENRH---
Sam3	-----IRSKYVDAIYLDKAFDVPHNLLCKLELFG--LDVKMCMWFRSFLSNRT---
Sam6	-----HPRKFLDVIYLDKAFDVPHNLLILKLNFG--IDDNLCDFWQSFISNRT---
Dong	-----KNRNLHCTYIDYKKAFDSPHSWLIQVLEIYK--INPIIISFLRNIMTHWQ---
DongAg1	-----KQRNLDMAIYDYKKAYDVPHSYLLKVLQLYK--VDGNVIKLMQHAMGMWS---
Rex6Fr	-----HTNLWTAWIDYKETYD SMPHTWILECLKLYN--INRTLREFIQNSMKLWN---
Rex601	-----HTNLCTAWIDYKKAYD SMPHTWITECLELYN--INRTLRAFIGNSMKLWK---
EhRLE1	-----YPKYVESYDIKAYDTVNHEWIESLKYFN--VEGVIDIIESMMTRWKF---
EhRLE2	-----KKRYLESFYDIRKAYDTVNDEWLENVLRVYFK--IPFQITELIKSMSSRWRIR---
EhRLE3	-----KWKWVETYYDVS KAYDSINHQWIKQCLIFYN--ILLVVINSILYLNNTYLN---
NeSL	-----RNLAVAWLDL TNAFGSIPHELIEYALTAYG--FPQMVDVVKD MYQGASMR---
YURECi	-----KNLLAVFLDVRNAFGSVRHECLLKLVRHFD--APHYLVELVRDIYTGATCR---
R2Ci-D	-----RDLNLVFLDLAKAFDTSVSHSIVKALRRQQ--VPEK FVRIQDLYD GAVTT---
R2Am	-----RSLFVASMDIKNAFGSVAHEAIFEALSKSG--APDSFVTYVRNCYDGFASV---
R2Dr	-----SQLAVVFVDFQAQAFDTSVSHHMLSVLEQMN--VDPH MVNLI REIYTN SCTS---
R2Ci-A	-----AELNLVFLDVS KAFDVS SHRSILHAVKRLG--VPPPLLKYVEELYADSETF---
R2Ci-B	-----KELNITFLDVRKAFDSSHKSLGIAAARLG--LPPPLITYISNLYPNCSTK---
R2Ci-C	-----KELNLAFDVRKAFDVS NHSTLLAAGRLG--VPPPLLKYIENLYEGSSTT---
R2Sciara	-----KELHIAI LDLVKAFNSVYHSALIDAITEAG--CPPGVVDYIADMYNNVITE---
HERODr	-----GD L AVLWLDLTNAYGSI PHKLV E VALEKHH--VPQKVKDIIDYYSKFSLR---
HEROTn	-----GSLAVLWLDLANAYGSI PHKLVEMALARHH--VPCS IKTLM DYYDSFH LR---
HEROFr	-----GELAVLWLDLTNAYGSI PHKLV EIALHLHH--VPSKIKDLIDYYDDFRLR---
RTE1	-----YQIPLTLVDFKKAFDSEVHQAIWKSLEDEG--ADGAYIDLLKECYKNCT---
RTE2	-----FQLPLLLLFIDYQTAFDKIGHS AVVSLEKAG--ADPAMRKM IQEMMDGGQ---
R2Dmel	-----FRSCYIANLDVSKAFDSL SHASIDTLRAYG--APKGFVDYQNTYEGGG---
R2Dsim	-----FRSCYIANLDVSKAFDSL SHASIDTLRAYG--APKGFVDYQNTYEGGG---
R2Dyak	-----FKSCYIANLDVSKAFDSL SHAAIYGT LRAYG--APKGFVDYVQKTYEGGG---
R2Dmerc	-----YASCYIATLDVSKAFDVAHDVFNVTAYG--APKSFVDYVRRWYSDGG---
R2ear	-----FRDLRLASLDIAKAFDSTHNTIEDTMEVRG--FPKPMINIMACYRRSK---
R2Fa	-----FRDLRLASLDIAKAFDSTHNTIEDTMEVRG--FPKPMINIMACYRRSK---
R2Bm	-----KLRECHVAVLDFAKAFDTSVHEALVELLRLRG--MPEQFCGYIAHLYDTAS---
R2is	-----KESMYIALLDFRKAFDVSNHTVLCGLLRDLG--LPERLTGYVESIYRSVH---
L1rat	-----KEQNHIISLDAEKAFDKIQHPFMIKVLERIG--IQGPYLNIVKAIYSKPV---
L1Mm	-----KDKNHMIISLDAEKAFDKIQHPFMIKVLERSG--IQGPYLNIMKAIYSKPV---
L1dog	-----KTKNHMIISLDAEKAFDKIQHPFLIKTLQSVG--IEGTFLDILKAIYEKPT---
L1hs	-----KDKNHMIVSIDAEKAFDKIQPFMLKTLNKLG--IDGTYFKIIRAIYDKPT---
swimmermedaka	-----KQE-TLVIISLDAEKAFDSVRWTFLYKVLGKFG--FCKSIIETISGLYNKPT---
swimmerpupfish	-----KLE-TLVIISLDAEKAFDSVRWAFLYKVLGKFG--FHPNIVDTFAALYSKPT---
SWDr1	-----DVP-EVLLSLDAEKAFDRVEWDYLFYTLKFG--FGTKFISWIKILYSSPM---
Ta11	-----VSKGFIKSNMSKAFDRVEWNYVRALLDALG--FHQKWGWIMFMISSVS---
ATLN60	-----KKYCSMAIKTDMSKAYDRIKWNFLQEVLMRLG--FHDKWI R WVMQCVCTVS---
KoshiFr1	-----LGVDTGISL DQEKTFDRVEHKFLWKVMERFG--FNPGFIAMIRVLS---DIV---
KoshiTn1	-----LGLNTGLISL DQEKAFDRVEHRFLWKTMERFG--FRTSFAKIQALYGGIESV---
KoshiFr2	-----LGIDIGLISFDREKAFDRVEHQYLWNTLAVFG--FSPGFIARVQVMYR---DVA---
KoshiTn2	-----LARQTGLISIDQEKAFDRVEHQYLWQTLAAFG--FNPGFVAMVRALYS---DIA---
KoshiDr1	-----FNLNFGLLSLDQEKAFDRVEHKYLWNTLTAFG--FNNEFVSMLKALYN---DVE---
KoshiDr2	-----NNINLGFLLSLDQEKAFDVKDHNYLFETLKAFG--FGDSFISMVKVLYN---KAT---
Tx1L	-----TGLSLAFLLSDQEKAFDRVDHQYLIGTLQAYS--FGPQFVGYLKTMYAS-AEC---
MutsuDr2	-----KKMNGFLISVDFEKAFDRVEHTYLFVDLKTFG--FGENFINWIKILYK---GAF---
MutsuDr3	-----KKEEGYIISLDFEKAFDRVEHQFLFKVLKFG--FGEVFRKWIKILYK---GIL---

MutsuDr1 -----KQKDGFLISLDFEKAFDRVEHDFLFGVLKSFSG--FGENFIKWVQILYR--GAV
DewaDr1 -----KKDEGLFSLDLEKAFDRVEHSYFDIIQKFG--FGENFIKWIKCFYT--DIF
KenoDr1 -----RNIRLAVVNLDFEKAFDRVSHQYLLQVLEKMG--FPGRFLAWVGLLYN--DLV
TRE3-B -----GII TLDFDFKAFDSISHDSIKRTLIIHG--IPIKLINLHKLLS--DSQ
TRE3-A -----GIITLY-ISKLLTRSHTVQSQITTHQ--HSNQYINLIMNLLT--KSE
TRE3-C -----NTLITFYDFNKAFDSISHKSI TRTLEHIG--IPPKFTAILLNLLK--DTK
TRE5-A -----DMEPIITFYDFEKAFDSISHNALRRTLAHLK--LPLKMLVTIMNLLN--ESE
Zorro-1 -----TYSFAMVLLDFSKAFDSL NHSYIHAVLMKYK--FPQSFIFNCMAITS--GHI
Zorro-3 -----AESAGFINLDFRKA FDSVHHDFILKVLQQVG--FGPKATNFLMAITA--KQK
slacs -----GSLAML DGRNAYNAISRRAL EAVYGDS--TWSPLWRLVSLLLGTTGE--
CZAR -----GSVAMLDGRNAYNAISRTA ILSAVYGNT--AWSPLWRVTRLLLGTGEL--
CRE1 -----EYVALDGVNAYNTMSRAHILQAVYAEQ--RLKPIWGVV KVALGGPGF--
CRE2 -----SDTLVALDATNAYNRMSRRHILEAAYAQP--ELRFAFGV VNL SLGAAGE--
GiIM -----HHLLTVDVRNAFNSVPHSVILFALRRAG--VVQPTVAYIESFLAARHS--
GiIT -----HHLLTVDVRNAFNSVPHAVIFSLHRAR--VPLPTVEYVSSFLGARHC--
BGR -----RREHLVAVFFDIEKAYDTTWKHGILRDLARMG--LKGHLPRFVEEFLKDRK--
Tad1 -----LGAVTSLMLLDLKGAFDRVNRWLLH TLWEMQ--LPTWIRWVASFVAGRR--
R2Nasonia -----GVIITILDVSKAFDTPHAVIQGCKEKG--IPETVAAYISNMYRDCS--
Cin4 -----K-QAALFVKLDISKAFDSL NWAYLLDVLKALG--FTQKWRDWIATILGSSS--
R1tarana -----CVTLLVSLDISNAFNSVWYPSVLRYL RQNR--FPGNLDIIVDYFRDRT--
Mosqu-Aa2 -----LHADMASLDAKAYNRAWTPHARRLADWG--LCGHIHLFKNFLKGR--
Yili -----MGWVVGSLDFRKA YDTISQSWVIKTLRNVG--VSELMINRILAVQQNAVTR--
BDDFcw -----FQKNIYFCFIDYAKAFDCVDHKNLWKILKEMG--IPDHLTCLLRNLYAGQE--
JAM1 -----QVPTHHLFIDFKAAYDSIDRIELWKIMDENS--FPGKLRILRATMDGVQ--
ING1 -----HQYRTGAVFVDYEKAFDTPVDHDKIAREMHRMK--VSPHIVKWCVSFLSNRT--
L1Tc -----NQLHYRPHRTLLVLVDFSKAFDSIDHRVLSRLLANIPG--VNCRR--WLRNFLCGRY--
SR2 -----RPTIVVFLDIRAAFDSLDRTVLWDCLLKKG--VPEKFINILKALYNTSG--
R4 -----KKHLSVAWLDYRKAYDSVSHEYIRWAINSVN--IPRSVQLTKRLMSDWE--
Zepp -----THQPGVQVFLDFEKAFDRLDRAWIERCMAAVG--FGPGVQRVWHILHSGTT--
Cn11 -----AEFSFLASLDASNAFN RVDRAEMAAAVKTHA--PTLWRTCKWAYGDSS--
DualenU2 -----QNLTYLYVDFSSAFNTIDHDKLLHIMYDLG--FPVDAVEIVRDIYHSAT--
DualenU1 -----HPNVYTYLYVDFSSAFNTIDHDQLSQVMYDLG--FPCDAVDLVADIRYRAT--
DualenCr3 -----KQDIYVMYADFSSAFNTISHDRLLIMWDLG--MPHDLIRVVQNLYSNAR--
DualenCr1 -----KDVYAVYDYSSAFNTIDQDRLLQIMFDLG--LPTDLIRAVRNLYAHAT--
DualenCr4 -----KRDLYVAYIDFNAFGTIDHDRLLVMHHLG--LPTDFIEVVRNLYSTAN--

ldt -----IIVRVGP-----HTSSPLPLSNGIPLGSPISVILFLIAFNKLSNIIIS-----
l-Dmel -----ITVRVGP-----HTSSPLPLFNGIPQGSPISVILFLIAFNKLSNIIIS-----
You -----FRVRINN-----VTSNSHILHNGIPQGSPLSVVLFMIAIEDINDIVTR-----
cgt_1_3 -----ARVLED-----TTTEDFPLSCGLPQGSPLSPILFLLYIADILADNQ-----
mgr583 -----ARVLEG-----TTTGFRRLGCGTPQGSPLSPILYMLYLAYLVKNGT-----
mars1 -----ALAFDGS-----KEELQPVTNGIPQGSPCSPILFLIYKPLFNELER-----
R1Dmel -----VIRSSS-----GTVEVPVTRGCPQGSISGPF IWDILMDVLLQRLQ-----
R1Dyak -----IVIRSSS-----GAVDVPVTRGCPQGSISGPF IWDTLMDVLLQRLE-----
R1Dmerc -----ASIVSSF-----GEVNVDTVTRGCTQGSISGPF IWNILMDVLLHRLE-----
R1Sc -----VYYVGKT-----GIVRKDVTRGCPQGSKSGPAMWKLVMNELLALV-----
TRAS1 -----VSVRYAG-----AEYERATSKGCVQGSIGGPILWNLLLDPLIHQLQ-----
R1Bm -----I AVVAG-----ECAEWKVSTMGCPQGSVLGPTLWNVLMDDLALPQG-----
RT1 -----FETSDGP-----VTRSITAGVPQGSILGPTLWNTMYDGVLDVALP-----
RT2 -----FDTSEGP-----VVRHVTAGVPQGSILGPTLWNI MYDGVLDVPLP-----
SART1 -----FPERRG-----WGHKAVSCGVPQGSVLGPLLWDVGFDDVWLRGAN-----
LOA -----VTASVHD-----STVTVLTKGCPQGGVLSPLLWSSLVDELLNRLT-----
Lian -----LFSTLRQ-----AAIRKLSVCGCPQGGVLSPLLWNLVADTLRLQLN-----
TRIM -----VEASLGT-----LCTRFVSRGTPQGRVLSPLLWNVAVNTLLREIE-----
BILBO -----VTSSMGS-----TQSRVYVNRGTPQGGVLSPLLWNI AVNKILCDLE-----
JockeyDmel -----FHVSVDG-----YKSKIPIAAGVPQGSVLGPTLYSVFASDMPHTHP-----
jockeydf -----FSVTADG-----CRSSVKFIEAGVPQGSVLGPTLYSIF TADMPNQNA-----
doc -----FAIRCDT-----STSRDCAIEAGVPQGSVLGPI LYTYTADFPIDYN-----

F	-FAVRCNT-----ATSTVHTIEAGVPQGSVLGPTLYLIYTADIP TNSR-----
CUTWORM	-FFVQSGE-----ALSKLCPAAGVPQGSVLGPILYLIHTADLPISNL-----
G	-FQVCCGT-----ATSTPRPIRAGVPQGSVLGPILYTLYTADLPITPS-----
HelenaDyak	-FKITVRN-----NYSTVYPMRAGVPQGSVLGPLYSLYADIPCPNF-----
helenamau	-FKITVRN-----SYSSIYPIRAGVPQGSVLGPLYSLYADIPCPNF-----
BS	-FMVVRN-----SYSIPRVMRAGVPQGSVLGPLYSVFTADLPCPNA-----
TART	-FEVKDQAG-----ETSRTGQIGAGVPQGSNLGPLYIFSSDMPLYI-----
AMY	-FRYRVEG-----TRSSPRPLTAGVPQGSVLSPLFLSFLVNDIPRSP-----
JuanA	-LQVNYQN-----SRSERLPVRAGVPQGSILGPILYNIFTSDLPELPQ-----
JuanC	-LQVCYQN-----SKSDQLPVRAGVPQGSILGPILYNIFTSDLPELPQ-----
strider	-FSVNLNS-----SQSARRILNAGVPQGSVLGPTLFNIFTHDIPQATN-----
NCR1GTH	-FSVFIKG-----QFSEIKEIKYGVQGVAVLSPTLYNIFTYDIVRETT-----
T1	-CRVKTGS-----YLSEFFCTSGVPQGCVLSPLLSFLINDVCNVLP-----
Q	-YIVKIDK-----HMSKEIVSSGVPQGSNIGPLLFILFINDVTLALP-----
CR1	-QRVVTNG-----SMSRWRPVMMSGVPQGSXVXPVLFNIFINDIDGIE-----
TurtCR1	-QRVVI NG-----SMSWQPVTSGVPQGSVLGPVLFNIFINDLEDGVD-----
SR1	-FKVRVNF-----LSGAMECPGVPQGSILGPLLFLIYINDLPQQVS-----
Sam3	-SSIKVCDHV-----SKNKLEVLGVPQGSVCGPFLFLIYINDLLGMLP-----
Sam6	-STVKVNSM-----STCKYISSGVLQGTVTGPFLFLIYINDLLEQFP-----
Dong	-TTLKLNPPNF-VTRQIAIKKGIYQGDLSPLWFCLALNPLSHQLH-----N-----
DongAg1	-TSLHVTDGKVV-LRSRLNIRRIYFQGDFTLWFCLAMNPLSRTLN-----QQ-----
Rex6Fr	-MTLEANSKL-----IAPMSIRCGIYQEDALSPLLFCGLNPLSQIINVTG-----
Rex60I	-TTLEANGKP-----LAQVSIKFGIYQGDALSPLLFCGLNPLSQIINKTG-----
EhRLE1	-IGYKFNEYL-----GNIKLNRGNLQGDLSNLLFIQMNVISQIE-----
EhRLE2	-IGYRYKEI-----REVKIKNGILQGDSISPLLFILQMNISDVIDRTN-----
EhRLE3	-LYYQ-ESD-----NMINVERGIYQGDLSPLLFILSIDVLSKQLDKQI-----
NeSL	-VKNATEKSDR-----IPIMSGVKQGDPI SPTLFNICLETVIRRHLESA-----
YURECi	-VRSSVGETGD-----IPCDRGRVQGYPLSGILFNLVTEVLI PGLSAGN-----
R2Ci-D	-VSVGGRATPQ-----LVVKRGVKQGCPLSPLLFNLVLDLDELSSS-----
R2Am	-VKLG-RDTAQ-----TTVRQGVLQGDPLSPILFNLVIDQIIRSLPET-----
R2Dr	-VELGRKEGPD-----IPVRGVKQGDPLSPLLFNALDPLIQSLERT-----
R2Ci-A	-LRGSGELSPS-----IKVRRGVKQGEPLSPHLFNAVWDWALSSLDQS-----
R2Ci-B	-LKVNGISKP-----IEVRRGVKQGDPLSPLLFNAMVMDWALSELDR-----
R2Ci-C	-IIANGERSPR-----IRVRRGIKQGDPLSIPFLGVMDWAMSNLNP-----
R2Sciara	-MQFEG-KGEL-----ASILAGVYQGDPLSGPLFTLAYEKALRALNNE-----
HERODr	-VSSGQLTSDW-----HQLEVGII TGCTISVTLFALAMNMMVKAETECCR-----
HEROTn	FVTSGSVTSEW-----HRLEKGIITGCTISVIFALAMNMLAKSAEPECCR-----
HEROFr	-VTTGSLTSTW-----QCLEKGIITGCTISVPLFSLAMNIVKSAEVECCR-----
RTE1	-TNFTPFH-----RPVAVPVTGVRQGDPI SPNLF SACLEHVFRKLSWIELKG-----
RTE2	-AEITVHD-----KKLKVNLCTGVRQGDSPALFSAALQAILTDCDN-----
R2Dmel	-TSLNGDGWS-----SEEFVPARGVKQGDPLSPILFNLVMDRLLRRLTP-----
R2Dsim	-TSLNGDGWS-----SEEVVPARGVKQGDPLSPILFNLVMDRLLRNLTP-----
R2Dyak	-ISLNGEGWC-----SEEFVPARGVKQGDPLSPILFNLVIDRLLRALP-----
R2Dmerc	-TYFNGGDWR-----SEEFVPARGVKQGDPLSPVLFNLIERLLRSLP-----
R2ear	-TRFTFNGWI-----SDTVKPTCGVKQGDPLSPILFNLVMDRMI RKL-----
R2Fa	-TRFTFNGWI-----SDTVKPTCGVKQGDPLSPILFNLVMDRMI RKL-----
R2Bm	-TTLAVNN-----EMSSPVKVGVRQGDPLSPILFNVMIDLILASLP-----
R2is	-LTLGDD-----WVQGRGVLQGDPI SPFLFNLMIDYILSGTQ-----
L1rat	-ANIKLNG-----EKLEAIPKSGTRQGCPLSPYLFNIVLEVLARPIR-----
L1Mm	-ANIKVNG-----EKLEAIPKSGTRQGCPLSPYLFNIVLEVLARAIR-----
L1dog	-ANILNG-----EALGAFPLRSGTRQGCPLSPLLFNIVLEVLASAIR-----
L1hs	-ANILNG-----QKLEAFPLKGTGRQGCPLSPLLFNIVLEVLARAIR-----
swimmermedaka	-ARIKING-----DFTETITLERGTRQGCNMSALLFALYIEPLGQWIR-----
swimmerpupfish	-AKIKVNG-----DLTNSFTLQRGSRQGCASPLLFALFLEPLDQWIR-----
SWDr1	-AAIRTNC-----HISPFSLERGTQGCPLSPLLFALVIEPLSIAIR-----
Ta11	-YSVLIND-----KAFGNIVPSRGLRQGDPLSPFLFVLCSEGLTHLMNRAE-----
ATLN60	-YSFLING-----SPQGSVPSRGLRQGDPLSPYLFILCTEVL SGLCRKAQ-----
KoshiFr1	-SMLKFNGS-----LCAPFRVHRGVWQGCALSGMLYGLSLEPLL SKIR-----
KoshiTn1	-LKLSFNGS-----LCAPFRACRQGCALSGMLYALSLEPLLCKIR-----

KoshiFr2	-SILKINGG	-----LAAPFTVQRGVRQGC	SLSGMLYSPAIEPLLHKIR	-----
KoshiTn2	-SVLKINGG	-----LSAPIEVQRGVRQGC	SLSGMLYTTIAIEPLLHKLR	-----
KoshiDr1	-SVLKFNGN	-----LCAPFKVFRGIRQGC	ALSGMLYTLAIEPLLIKIR	-----
KoshiDr2	-CMVKMAGG	-----LSVPIEIHKGIRQGC	PLSGQLYSIVIEPLLCKLR	-----
Tx1L	-LVKINWS	-----LTAPLAFGRGVRQGC	PLSGQLYSLAIEPFLCLLR	-----
MutsuDr2	-TKVKCNGF	-----LTDCKFKITRSIRQGC	PLSALLYSLIAEPLGLAIKQE	-----
MutsuDr3	-TKIKCNGF	-----LTECFKITRSIRQGC	PLSALLYSLVAEPLGLAINEE	-----
MutsuDr1	-TRIKCNGF	-----LTDCKFKITRSIRQGC	PLSALLYALVAEPLGLAVKHE	-----
DewaDr1	-SCFKINGF	-----LTDYMEISRSIRQGC	PLSALLYTLVAEPLGLAINGE	-----
KenoDr1	-SKIVNGH	-----LTKAVNICSGVRQGC	PLSPLLYVVCIEPLAQLLRD	-----
TRE3-B	-AKISINGK	-----TTRKFDIKRGVKQGDPI	SATLFVIVIEI LARTINAD	-----
TRE3-A	-ARIEINGR	-----TTPFEIKRGVKQGDPL	SPTLFVLVIEALARKILQD	-----
TRE3-C	-NKIKINDF	-----LVNGITIRRGTKQGDPI	SPTIFALVLEPLLDIIND	-----
TRE5-A	-TSVYINNS	-----LSKSFTSKRGTQGDPI	SPTIFALVVECMATTIIND	-----
Zorro-1	-GNIRINDK	-----SSEPLRLLAGVRQGNPL	SPTIFILCLEPFLAKLK	-----
Zorro-3	-AKVSINI	-----EGPCFPLKRGVRQGNP	SPLIFILILETFLARLS	-----
slacs	-VGFYENGK	-----LCHWESTRGRVQGMVL	GPPLFSIGTLATLRRQLQ	-----
GZAR	-VGFYEKG	-----QLVHSWKSTRGRVQGMVL	GPVLFSGTIATLRQLES	-----
CRE1	-LGVYRDGC	-----LKGNLWSTKGI RQGMVL	GPLLYATGMAAAGPVR	-----
CRE2	-LALYENG	-----AKIHALKSTEGVRQGMVL	SPLLFANAMSGIRPLM	-----
GiIM		-----SDLPAVPAGVPQGDPL	SMAMFCQSLVWPVETYL	-----
GiIT		-----VDLAAVPAAGVPQGDPL	SMALFCQSVWPAEAFLS	-----
BGR	-FQVRVGN	-----STSDTHDQEMGVSQGS	ILSVTMFNKINSIINALS	-----
Tad1	-GSLFFDD	-----ETSRPYAITAGVPQGS	PLSPILFIFITPLYRCLA	-----
R2Nasonia	-TAIRTRSG	-----DVKIGMKRGVKQGI	PCHLSFSIWVLEPLLERLQETS	-----
Cin4	-SKIIING	-----QQTKEIKHMRGVRQGD	PLSPFLILAMDPLQRMIERAA	-----
R1tarana	-ISVRFGS	-----TRVTRNVVRGCPQGS	VLGPLLWNMVIDPVLRERL	-----
Mosqul-Aa2	-FQVIGNN	-----HSSIRAEETGVPQGS	VI AVTIFLVLMMNIFEALP	-----
Y11i	-INIRG	-----VLSRPVRIKIGVRQGC	PLSPTLFI IAVDALVRRDR	-----
BDDFcow	-ATVRTGH	-----GTTDLFQIGKGVQGC	ILSPCLFNFYAEYIMRNG	-----
JAM1	-NCVKISG	-----HSSSFESRRGLRQGD	GLS-CMSCCHAESLYLTVEAR	-----
ING1	-GRVRFKE	-----KLFRSRTFERGVPQGT	VPGSIMFIVMNSLSQRLA	-----
L1Tc	-AKTRVGH	-----RHSDRRPMLRGVPQGS	VLGPYLFSLYVHPLLNLN	-----
SR2	-RVRAYN	-----HLSPLFHSSGVRQGC	PI SPFLNF AIDDI L ETALMDVS	-----
R4	-TRFESTQCRP	-KLRS DKMKVLNGIFQGD	SLSPTLFLVLCI API SYALNKG	-----V
Zepp	-SRVAFNG	-----WHTDAFPVAAGVFQGS	PLSPLLFVLARAPMAAHARMLAG	-----
Cn11	-DLVCGD	-----KILQSSQGVQGD	PPGPLFFSITLRPTLNALSQSLG	-----
DualenU2	-TSIETRHG	-----TTGPIPIDRGSIQGD	TLSPFLFLIFIEPLLRWLHSGG	-----
DualenU1	-TSVSI SHG	-----STEPISIERGSIQGD	TLSPLLFLIFIEPLLRWLHVGG	-----
DualenCr3	-TYVRTEHG	-----LTAPISIERGTVQGD	TLSPVLF LMFIEPLIRWLHVGG	-----
DualenCr1	-TRIRTEHG	-----STSAPIERGTVQGD	TLSPVLFILFMEPLVRWLHAGG	-----
DualenCr4	-TTIRTAHG	-----RTSPVQIRRGTMQGD	TLSPLLFIIFLEPLLRWLHYGG	-----

ldt	-----L-----	YKEIKFNAYADDFLI	INFKKNNTNI	-----SLDNLLNDIG
l-DmeI	-----L-----	HKEIKFNAYADDFLI	INFNKNNTNTNF	-----NLDNLFDDIE
You		HKDIYISLYADDA	I FTKIKNINTVR	-----EKFLEILQEIN
cgt_1_3		RLRFGYADD	IGLLETSPSLEENTT	-----ALSQEI TQIL
mgr583		KWRLAYADD	VL TWKSSPSLEENVR	-----WLEDKLRDMH
mars1		HKLNIQTPSY	IDDVAIMLTGKSTVKNA	-----TLQKAAVIAF
R1DmeI		PYCQLSAYADD	LLLLVEGNSRAVLEE	-----KGAQLMSIVE
R1Dyak		PYCLLSAYADD	LLLLVEGNSRVVLEE	-----KGAQLMSIVE
R1Dmerc		THCTISAYADD	MLLIEGESRSQLEL	-----KGAQLMEIVG
R1Sc		AAGFFIVAFADD	GTIVIGANSRSAL	-----LGT RCLQLCH
TRAS1		ARGEYIQAFADD	VLVFDGDSALQIER	-----QANTSLEHVQ
R1Bm		IEGTEMVAYADD	VTVLVRGDSRAQLER	-----RAHAVGLAE
RT1		QDCEMVAYADD	VLLIPGIDVNAVKA	-----AAEEAVASVS
RT2		PDVEVIGYADD	LALLVPATTTDEVRA	-----RAEEAVDQVQ
SART1		LRGVQVICYADD	TLVTARGDDYRSASI	-----LAAA AVATVV

LOA	-----NSG IQCQGYADD I V I MARGKFEEESLCD-----MVQSGLR I TY
Lian	-----NCGFPTYGFAD EYLAL I V GMC I STLFD-----LMQSALQVVE
TRIM	-----GGGCRVVAYADDVA I FSGKFPQTLCE-----C I TSTLTKMS
BILBO	-----GEGCKVVAYADDVA I I FSGKFPQTLCE-----LMTAKLARLS
JockeyDme1	-----VTEVD-----EEDVL I ATYADDTAVLTKSKS I LAATS-----GLQEYLD AFQ
jockeydf	-----VTGLA-----EGEVL I ATYADD I AVLTKSTC I VEATD-----ALQEYLD AFQ
doc	-----LTTSTFADDTA I LSRSKC P I KATA-----LLSRHLTSVE
F	-----LTVSTFADDTA I LSRSRSP I QATA-----QLALYL I D I K
CUTWORM	-----ATTGTFADDTAVLVSHTD HKVASA-----MLQTC LDD I A
G	-----RSLTVATYADDTAFLASASDPQEAST-----I ILSQLDALD
HelenaDyak	-----DHMEA-----PYKALMATYADD I AVVYSSGDSREAAK-----GLQEY I NALA
helenamau	-----EHMAA-----PNRTL I ATYADD I AVVYNSRD I REAAN-----GLQEY I NALA
BS	-----YHMAD-----PRKALLATYADD I ALLYSSNCCNEAAR-----GLQEYLT TLA
TART	-----YRPSP-----TER I MLSTYADDT I VLSSDTLATAATR-----NNENYLKSF S
AMY	-----THLALFADDTV VYSSRNKSL I AK-----KLQSAALALG
JuanA	-----GCQKSLFADDTGLSAKGRSLRV I CS-----RLQKSLD I FS
JuanC	-----GCQKSLFADDT S I SAKARSLRV I TR-----RLQKSLD I FN
strider	-----CVLSLFADDAAVYSAGFSYSE I NQ-----SMQSYLNELD
NCR1CTH	-----NN I ALFADDTALYHSAENSAD I VT-----QLLHTGRK VQ
T1	-----PDGHLLYADD I K I FLPVSS--SSDCM-----SLQHYLNAFV
Q	-----PDS I SLFADDAK I FAP I NN--TGDCT-----FLQDC I E I FC
CR1	-----CTL SKFADDTKLSGAVDT--EEGRD-----A I QRD LDRLE
TurtCR1	-----CTL SKFADDTKLGGVVD TLE--GRD-----R I QKDLNKLE
SR1	-----SDLLLFAD DVK L WRE I RNHN--D I L-----VLQEDL TRLQ
Sam3	-----PDVQ I SAFADD I K I YG-----DNSN-----S I QKSID I VT
Sam6	-----ADVHTAFAD DVK I SS-----ENIE-----S I KKS I S I IE
Dong	---DRGG I P I KQDNT-----ET I I SHL I YMDD I KLYAKNDK-----EMKKL I D TTT
DongAg1	---CNFGYLLKSEE I S-----TR I TH TFFMDDLK LFAETVQ-----KMHLLKNVQ
Rex6Fr	---GYQFQS-----GTT I SHL I YMDN I KLHAKNEH-----D I DSL I HLTR
Rex601	---YG YRLRN-----GAN I SHLLYMDD I KLYAKSER-----D I DSL I HTTR
EhRLE1	-----EKFPKANHTLYMDDL R I MTESE-----EMG I HNE I K
EhRLE2	-----EKRLKVKHVL YMDD I KVTSETKK-----G MEMVHKN I I
EhRLE3	-----SKL N I KMNGE-----EKQVQLNH I LYMDDLK I MTNSLD-----EMEKAHKL T K
NeSL	---NGHQCLKTR-----I KVLAFADDM A I L TDSPD-----QLQRLSKLD
YURECi	---DGYRMACLGG-----KL TQV LAYADD L VVVTENRD-----QMLRQLGVGE
R2Ci-D	---FGYTLDDG-----SKLSVMAFADDLVLSSGSLA-----GLRKL I ET TQ
R2Am	---VGVQLDAN-----TKLNSMAFADDL I LLSSEA-----GMRRMLGVLA
R2Dr	---GKGCEAEG-----HKVTALAFADDLALVAGSWE-----GMAHNLALVD
R2Ci-A	---FGVTVGE-----ARVNHLAFADD I VLLSSSQP-----GLQRL I DQLT
R2Ci-B	---VGVQ I GE-----QR I NHLAFADD I I LVSSTK I-----GMVSS I N T L S
R2Ci-C	---VGSS I GG-----KS I NCMAFADDLVL I SRTQ I-----GLQTNLDT I S
R2Sciara	---GRFD I AD-----VRVNASAYSDDG LLLAMTV I-----GLQHNLDKFG
HERODr	---GPLSKSGV-----RQPP I RAFMDDLTVTTMAVP-----GARW I LQGLE
HEROTn	---GPI TKSGI-----RQPP I RAFMDDLTVTTT SVP-----GCRW I LQGLE
HEROFr	---GPLSRSGT-----RQPP I RAFMDDLTVMTT SVP-----GCRWLLQGLE
RTE1	---EAEDYDT I PGMRVN-----GRNL TNLRFADD I VL I ANHPN-----TASKMLQELV
RTE2	---EFAGVG I N-----VEGRH I RRLEFAD DVVL I CSTPG-----EVQERLE I LD
R2Dme1	---SE I GAKVG-----NA I TNAAAFADDLV LFAETRM-----GLQVLLDKTL
R2Dsim	---SE I GAKVG-----NA I TNAAAFADDLV LFAETRM-----GLQVLLDRTL
R2Dyak	---SE I GTKVG-----NAM I NAAAFADDLV LFAETRM-----GLQTL LDKTV
R2Dmerc	---KDI GVHVG-----NAKVNACAFADDLMLFASTPK-----GLQELLNTTV
R2ear	---KEVG VNVG-----SKHYNGLTFADDL L L FATTPE-----GLQSS I D I VH
R2Fa	---KEVG VNVG-----SKHYNGLTFADDL L L FATTPE-----GLQSS I D I VH
R2Bm	---ERVG YRLE-----MELVSALAYADDLV LLAGSKV-----GMQES I SAVD
R2is	---AGVG VGVG-----ERL VSSLAYADDLALLASSRR-----GLNANLESVL
L1rat	---KQKE I KG I Q I G-----KEEVK I SLFADDM I VYLSDPKS-----STREQLKL I N
L1Mm	---QQKE I KG I Q I G-----KEEVK I SLLADDM I VY I SDPKN-----STRELLN I N
L1dog	---QQKDFRG I QFG-----KEEVKLSLFADEM I LY I ENPKV-----STPRLLQLMQ
L1hs	---QEKE I KG I QLG-----KEEVKLSLFAEDM I VYLENP I V-----SAQNLLK P I S

swimmermedaka	-QRADIKGVKVS-----	GKEQKLSLFADDLLLTISQPTK-----	TLPIMDSLK
swimmerpupfish	-QRSDISGVTMT-----	AGEQKLALFADDVLIFLTQPNQ-----	TLPRMLTVLE
SWDr1	-NDINIKGIQRD-----	NFEHKISLYADDTLLYISEPLT-----	TLPQIMTLLT
Ta11	-RQGLLSGIRFSEN-----	GPAIHHLFFADDSLFMCKAVKE-----	EVTVIKSIFK
ATLN60	-EKGVMVGI RVARG-----	SPQVNHLFFADDTMFFCKTNPT-----	CCGALSNI LK
KoshiFr1	---ACIDGLILPS-----	FSKKIVLAAYEDDVMVLFSSQKD-----	LDVLVNL MV
KoshiTn1	---SSIAGFVLP-----	FNKNI VLSAYADDVVI L TQNGSD-----	VDVLSRLTD
KoshiFr2	---KTLMGVSFPG-----	CPTAVKLMAYADDVVVI VNTQRD-----	IQVLGETIE
KoshiTn2	---QRLAGVCFPQ-----	CPVSFKLSVYADDLIVLTNSQQD-----	IDVLTNTVN
KoshiDr1	---AKLSGLSLPS-----	CTNCFKVSAYADDIVVLINGQID-----	VTLLLELMN
KoshiDr2	---RWLTGLSVPELD-----	FQEPVKISAYADDTLTVI VKDHSD-----	VHFLREIE
Tx1L	---KRLTGLVLKEP-----	DMRVVLSAYADDVILVAQDLVD-----	LERAQEQE
MutsuDr2	---TKIKGIEIEEEE-----	DEGKIYQYADDTTIVVKEKKS-----	VKEAMKKVQ
MutsuDr3	---EKIKGIEIEENK-----	VNKKMFQYADDTTIVK GKES-----	VKEAMKIVQ
MutsuDr1	---DRIKGIEVEGG-----	VNKIFQYADDTTILQLDAS-----	VKQAMETVQ
DewaDr1	---KKIKGFKIEINR-----	TEQKIYQYADDTTLFLKDFKS-----	VGKAMEIFD
KenoDr1	---KWI TGFKIPGG-----	L I ASCVLYMDDVTLLTTDLTS-----	ARRAMD LTD
TRE3-B	---NSIIGLPI SPNP-----	QIKIKFTQFADDSTTYNINYEQ-----	QQQSIKHFD
TRE3-A	---DRITGLPLN-NS-----	NHREKFQSFADDSASMVPDSQQ-----	LELVLQHFN
TRE3-C	---NTIKGFTLP-N-----	SKSLKLTAFADDIATFTNSTEE-----	LMKINTKI Q
TRE5-A	---RCINGVTK-----	ETIKILQFADDTATIAYNFMD-----	HFLMNEWIK
Zorro-1	---HSIVGIPLE-AN-----	I-FVKVLAYADDVTCLNPK-----	QHILSNALN
Zorro-3	---KEIEGIGVV-NE-----	VSLVAYTAYADDVIFFKNKND-----	QERIQQLLE
slacs	-----QT-----	FPEAQFTAYLDDVTVAAPPEE-----	LKNVCAATA
CZAR	-----S-----	FSNASFTAYLDDVTVAAPPGM-----	LGKVCEATS
CRE1	-----QR-----	IPGVPVTAYIDDI TLAASGAE-----	GARAAEAYA
CRE2	-----EM-----	HPRVKVVAYLDDVTLIGPHAA-----	VQDFLAEAGP
GiIM	-----	QYKVVAYADDLVIASEEAI P-----	IDTVKSDAQ
GiIT	-----	QYELLAYADDLVVASHPSVP-----	ADTVKR DAS
BGR	-----	PGIECSLYVDDFVILTYGKNMNTLER-----	KLQLCLNKIQ
Tad1	-----T-----	IPNTITVGFADDTNVAVARTTEENCR-----	TLQA AWEVCS
R2Nasonia	-----GVEIEG-----	MNLSCAAFADDIVCFANTAP-----	EAGRQLRMVA
Cin4	HEGLL---GQVLPN-----	GAKFRCSLYADDAGVFRADKL-----	DLKVLKRILE
R1tarana	-----	PGGAILQAYADDLVLAVPGKSRVDLLG-----	KAVDCLSTVR
Mosqul-Aa2	-----	KEYIFVYADDILLVVI GRTLKFI RR-----	KLQA AVSAVA
Y11i	-----	EMFGLAPGLPLSHHHTTG-----	HRPPQPPT HPE
BDDFCow	-----LEEQAQIKIARRNINNLRYADDTTLMAESEE-----	-----	ELKSLLMKVK
JAM1	-----	FSRDPYNLFFADDMMLLGENLK-----	QWSDLFTRLK
INGI	-----E-----	VPLLQHGFFADDLTLARHTERDVI NH-----	TLQCGLNVVL
L1Tc	-----S-----	FAGVTADMYADDLSIIVKQSREDAIP-----	TANMVLQKLH
SR2	-----NGGVDMLPG-----	ERLLDLEYADDIVLLCDNAQG-----	MQSALNQLA
R4	GQCQSSSGWSAGY-----	GFEIGHQFYMDLKLARTPA-----	MLDSQIQVVS
Zepp	---QLAFQPI RLPSG-----	EPAPVMHQHADDTSVHARTPGMLRSCWG-----	PSVGLHCAATG
Cn11	-----	PSTQALAYLDDIYLF SNDSQ-----	VL SKTTQFLA
DualenU2	-----	RGYRYGCLTPTDNDRHNCSSLAFAADLA I L TNCHKDMQVQCR-----	KIELFLEWTG
DualenU1	-----	RGYTYGCLSATENTRYRTSSLAYADDLAVVTNSEAD-----	LRTQCEKIH
DualenCr3	-----	RGYSYGCLPPLHNNRYNCSSAAYADDLAVLTNTLS-----	DLRIQCCKIH
DualenCr1	-----	RGYHYGCLTPSENLYQHCSAAAYADDLAAL TNSLDD-----	LQVQCCKIA
DualenCr4	-----	RGYRYGCLTNSENDQHNCSSLYADDLALAANSRDN-----	LRCQTDKIA

ldt	NWGSY-----	SGASLSLS-----	KCQHLHICK-----	-----
l-Dme1	NWCSY-----	SGASLSLS-----	KCQHLHICR-----	-----
You	SWGAT-----	SGASLAIE-----	KCQTLHICR-----	-----
cgt_1_3	NWGTD-----	NKVAFEPA-----	KCEAVHFSR-----	K-----H
mgr583	EIAAE-----	EKIHF AAE-----	KTEV IHI TKKRHG-----	RN-----P
mars1	EWARG-----	NAIFD DS-----	KSELIHFAN-----	-----T
R1Dme1	TWGAE-----	VGDC LSTS-----	KTVIMLLKG-----	-----
R1Dyak	TWGAE-----	VGVA VSTN-----	KTVIMLLKG-----	-----

R1Dmerc	GWGIE	VGVSVSAT	KTVTMLLK		K
R1Sc	EWGKR	VCVPVSAG	KTTCILMKG		H
TRAS1	AWGVR	NKLFAPH	KTCAMTITR		R
R1Bm	GWASR	NKLDFA	KSRCIMLRG		
RT1	HWAQ	HHLQI APE	KTECVL ISS		
RT2	RWMQQ	HGLELAPA	KTEAVL ISS		
SART1	ARIRK	LGLEVALH	KSEAVCFHPAR		
LOA	DWCKE	VGLNLNPT	KTVIVPFTR		R
Lian	SWCRQ	YGLSVNPN	KTSIVLFTE		R
TRIM	EWADK	CGLGVNPS	KTELVLFTR		K
BILBO	EWTKS	RGLGINPS	KTELVLFTR		K
JockeyDme1	QWAEN	WNVRI NAE	KCANVTFAN		
jockeydf	EWAVK	WNVSI NAG	KCANVTFAN		
doc	RWLAD	WRISINVQ	KCKQVTFTL		
F	KWLS	WRIVNEQ	KCKHVTFTL		
CUTWORM	LWLK	WRIKANET	KSVNVTFTK		
G	PWLKR	WTIAVNAD	KSSQTTFSL		
HelenaDyak	AWCKR	WNLKINAT	KTTNLCFTL		K
helenamau	AWCKR	WNLKINQL	KTTNPCFTL		K
BS	AWCKR	WNLKVNPN	KTTNPCFTL		K
TART	DWADK	WGISVNAA	KTGHVIFTL		N
AMY	QWFRK	WRIDINPA	KSTAVLFQR	GSSTRISSR	I
JuanA	SYLQK	WEISPNAS	KTQLIFPH	KPKAL	Y
JuanC	SYLKE	WKITPNVLS	KTQLIFPH	KPRAD	F
strider	IYYK	WKIKINPN	KTNAIFFTK	RRKPR	Y
NCR1CTH	QYMDK	WKINLNKQ	KSQAFITN	RYSK	Q
T1	HWCSS	NLLRLCPD	KCSVISFSH		
Q	SWCKR	NGLTICIE	KCYCVSFSR		
CR1	RWARV	NLMRFNTA	KCRVLHLG		
TurtCR1	DWAKR	NLMRFNKD	KCRVLHLG		
SR1	SWADD	NGLTFNTS	KCKVVHLRH		
Sam3	DWCRK	WSLNLAE	KSVVVHYGK		
Sam6	QWCDI	WKLKLAEN	KTQVLHIGK		
Dong	IFSND	ISMQFGLD	KCKTVHIK		GKV
DongAg1	GFSND	IKMEFGIG	KCRSILHR		GQV
Rex6Fr	IYSKD	IRMSIGLD	KCGQISSR		GKV
Rex601	IYSTD	IGMSFGLE	KCSRMVTKR		GKV
EhRLE1	EIISG	IGMEMNEN	KSMVLKHSN		TK
EhRLE2	ETIEV	IGMEVNVN	KSGVMKKN		IG
EhRLE3	EIFNA	IGLKNLE	KSGIMTNIS		GK
NeSL	NDCTP	LNLIFKP	AKC ASLVIQKGVVRSAS		
YURECi	EFGRW	AGLAFNQ	RKCGLIGWRTL RGGRRVALEDP		
R2Ci-D	QFLLR	CGMGLNV	QNCTSLGWKSMVGGKQVRLRTEPF		
R2Am	GVSSK	FGLIFHP	GKCKYLAMIWAGKQKMKIATDLS		
R2Dr	EFCLT	TGLTVQP	KKCHSFMVRPCRG AFTVNDCPP		
R2Ci-A	THLGE	SGLRVNS	TKSASIRI AVDGKNRWWVDPDRS		
R2Ci-B	RHLAK	SGLEISAGKE	GKSASMAI VVDGKKNMWTVDPLPR		
R2Ci-C	YNLNQ	SGMTLNS	EKCATLRLAVDGKSKKWWIDHRPF		
R2Sciara	ETLAK	IGLRINS	RKSKTVSLVPSGREKMKIVSNRR		
HERODr	RLVAW	ARMSFKP	AKSRSLV LKKGKVRDEF		G
HEROTn	RLMTW	ARMRFKP	GKSRSVLKAGKVTDRF		R
HEROFr	RLISW	ARMSFKP	AKSWSLVL RKGKVADRF		C
RTE1	KQCSE	VGLEINTG	KTKVLRNRF		
RTE2	RISSN	YGLKINQS	KTVLLKNKF		
R2Dme1	DFLSI	VGLKLNAD	KCFTVGIKG		
R2Dsim	DFLSL	VGLKLNAD	KCFTVGIKG		
R2Dyak	DFLST	VGLKLNAD	KCFTVGIKG		
R2Dmerc	KFLSS	VGLTLNAD	KCFTS IKG		
R2ear	LFLLE	CGLLINKQ	KSFVLTVKA		

R2Fa	LFLLE	CGLLINKQ	KSFVLTVKA	
R2Bm	CVGRQ	MGLRLNCR	KSAVLSMIPDG	
R2is	ARARS	VNLALGIN	KCATIGKRW	
L1rat	NFSKV	AGYKINSN	KSVAFLYTK	
L1Mm	SFGEV	VGKINSN	KSMAFLYTK	
L1dog	HGGSV	AGYIINAQ	KSVAFLYTN	
L1hs	NFSKV	SGYKINVQ	KSQAFLYTN	
swimmermedaka	DFGTL	SGYKINVN	KTQ-VLTL	
swimmerpupfish	EYGSL	SGYKINVN	KTQ-ILRL	
SWDr1	AFGKI	SGYKINMQ	KSE-LMPIN	
Ta11	VYGDV	TGQRINYD	KSSITLGAL	
ATLN60	KYELA	SGQSINLA	KSAITFSSK	
KoshiFr1	LFNCL	SAAKVNWQ	KSEALAVGRWTN	
KoshiTn1	SFNVL	SSARVNR	KSEALAVGEWRD	
KoshiFr2	LFKAL	SSAKVNW	KSVACATTRDF	
KoshiTn2	DFGFI	SSAKANWG	KSEALMAGGGLG	
KoshiDr1	DFKKI	SATKINWS	KSEALLVGNWHN	
KoshiDr2	QYGKA	SSARMNWS	KSNALWCGQATN	
Tx1L	VYAAA	SSARINWS	KSSGLLEGS	L
MutsuDr2	EFCKG	TGSKINEN	KTQYMRFG	
MutsuDr3	QFCKG	SGSKVNE	KTVYMKFG	
MutsuDr1	HFCKG	SGAKINEN	KTGYLRFG	
DewaDr1	KYCRG	SVAKVNE	KTEYMKMG	
KenoDr1	FYGRA	SGARLNRK	KSEAQLFGP	
TRE3-B	NFCAS	TSSSLNFD	KSAIIEINPHKITDKH	II
TRE3-A	SFCKA	TPQ-N	KHRQIFINSYRQPRQ	
TRE3-C	KYCSA	TSSSLNKE	KTVMIAIG	
TRE5-A	KFCQA	TSKINOT	KCSCITFK	
Zorro-1	QFAKA	SGLEVNKN	K-TILLS	RK
Zorro-3	DFGRE	SGLYLNIN	KTEVCYFN	DI
slacs	EAMEA	LGI VNNAD	KTEVLELTG	
CZAR	RAMRA	LGIETNED	KTEVLNKG	
CRE1	DALET	VGVVTNAR	KSMVVGPEG	
CRE2	QLSR	VGFDINPA	KSHHLAKLE	
GiIM	SALSR	IGLTVELSKCSSTQAGASFMG		
GiIT	DALAK	VGLCVEQPKCASTQLGAI AFMG		
BGR	GWAKY	NGFKFSDS	KTVSMHFCN	L
Tad1	GWAGA	RGMEFEAT	KTELMHFTR	
R2Nasonia	DYLGR	LDMSLSVS	KCIAVEYVPHR	K
Cin4	AFEWC	SGLKINFE	KTEIFPIRY	
R1tarana	EWAGR	SKLALDTA	KSKAMVLNS	
Mosqul-Aa2	RWAAN	SGFDLSAE	KSVISHVCR	S
Y11i	AVAAG	HMKVSAF	ADDIAVFLN	
BDDFcow	VESEK	VGLKPNIQ	KMKIMASGP	
JAM1	REATR	VGLMVNVS	KTKYMLVGG	TEC
ING1	QWSKE	YFMSVNVA	KTKCTLFGC	
L1Tc	AWSQE	NGLAINPS	KCEAAWFTLST	HTESD
SR2	ISVRR	YGMCFAPS	KCKVLLQDW	
R4	EVSEA	MGLHLNLS	KCAKAHYAP	H
Zepp	ARLQRSKSQALGLAASAI SPGP	IQSRGVTFAASSD		GVKHLG
Cn11	DKQHI	IKLNEK	KCKLISFDEIR	
DualenU2	MKINASKCALTGILYRDAACGLVNSPTDHGMLRN			
DualenU1	RYLQWS	GMAINAK	KCAVTAILHGDN	TK
DualenCr3	RYSEW	AGLQVNHA	KCRVTGILHRRAMQDKGLNGPTCN	RT
DualenCr1	SYAEWASLRVNHTKCATTAI WHDKSRSDPNLDGPTG			KATLAA
DualenCr4	RYAAWG	GMRINRD	KSACTGILHSFASANSDDKSMKG	

ldt -KHHCTSKISCNN-----IQIPTVTSLK----ILGITLNNKYKWNTH

I-DmeI	-KRHCTCKI SCNN-----	FQI PSVTSLK-----	ILGI TLNKKYKWNTH
You	-KQRCNLSDI VFN-----	SRTI KDVNFLK-----	ILGI TFDPKLLFKQH
cgt_1_3	KQRKDLPI QAREL-----	TI KASTKPVR-----	WLGWVFDKKL TFRHH
mgr583	EIRINGRTVTPVQLPGGRR-----	GQSASGAERYPGMR-----	WLGWVFSRRLDGRRH
mars1	NKVPTCPMVL PNG-----	TEL RPLPSVR-----	WLGILLDRKLSFRPH
R1DmeI	-ALRRAPT VRFAG-----	RNLPYVRSCR-----	YLGITVSEGMKFLTH
R1Dyak	-TLRRAPT VRFAG-----	ANLPYVRTCR-----	YLGITVSEGMKFLTH
R1Dmerc	LSTGRPPAVSFAG-----	ANLRYVTQYR-----	YLGITVGERLSFLPH
R1Sc	LSANRPPCIRLG-----	TSISYKEVK-----	HLGIFVAERMNFRPH
TRAS1	LKYDTPRLNMGG-----	TEIATYKELR-----	ILGLTIDDKLTFNTH
R1Bm	-KFQRPPIVRYGS-----	HVIRFENQVT-----	VLGVSS-TIASLSRH
RT1	TKNPTQVTIRVGD-----	VEVTSSRTMR-----	YLGVLTHDHL SWLPH
RT2	KKTTPQVTFRVGD-----	VEVQSSRSIR-----	YLGVLQDHLKWRDH
SART1	KGPPPGASITIGG-----	TAIAVRSQK-----	YGLVLD SRSWFD RH
LOA	HKLQMRQIWLSG-----	TPLERSREVK-----	YLGVIFDSKLNFGTH
Lian	RNRDGI RPLR LFG-----	TEINVTDQVK-----	YVGVILDSKLLWTAH
TRIM	YKVPVLI PPRLCG-----	ETLVFSNNAK-----	YGLLILDRKLDWKL S
BILBO	YKIPPLNPPILNG-----	CRLSFSDSAS-----	YGLVVIDDKLSWNLS
JockeyDmeI	-RTGSCPGVSLNG-----	RLIRHHQAYK-----	YLGITLDRKLTFSRH
jockeydf	-AIRDCPGVTING-----	SLLSHTHEYK-----	YLGVILDRSLTFRRH
doc	-NKQTCPPVLN N-----	ICIPQADEVT-----	YLGVLDRRLTWRKH
F	-NRQDCPPLLNS-----	IPLPKADEVT-----	YLGVLDRRLTWRRH
CUTWORM	-RKDTCPPVQLNR-----	IQVQAHEVK-----	YGLYLDRRLTWKKH
G	-RRGDCPPVTLNG-----	ETIPTSSSPK-----	YGLL-DRRLTWHTR
HelenaDyak	TLIKKTPPLQLEG-----	VTL DQPLQAT-----	YLGITLDRKLTFGPH
helenamau	TLIPNTPAIRLEG-----	VTLNQPLQAT-----	YLGITLDRKLTFGPH
BS	TLSPVTAPIELEG-----	VILDQPSQAK-----	YLGITLDRKLTFGPH
TART	DLPTSLRTMKIKG-----	QVIKIESKQS-----	YLGVILDSKLTLSPH
AMY	RRRNLTPI TLFR-----	QPIPWARKVK-----	YLGVL DASMTRPH
JuanA	LKPSSRHVVTMRG-----	VPINWSDEVK-----	YGLMLDKNLTFKNH
JuanC	LKPKSHHI KMNE-----	VNLKWEDQVK-----	YGLGFDKNLTYKDH
strider	LP--DRQLRILDS-----	PIQWVDNIR-----	YLGIFDKLTFKYH
NCR1CTH	LPRNNIKFLNENIK-----	WESEANIWEW-----	YGMVIDNRVTLKPH
T1	SLSPI SFNYTLSN-----	SSLRVLSIR-----	DLGILLDSRLNFKLQ
Q	CRSPVTGTYFMDG-----	TAVNRQNHAK-----	DLGVL DSSLNFKQH
CR1	-WRNPRHLYRLEG-----	AVLESSSAEK-----	DLGVLMDDKLNMSQQ
TurtCR1	-WKNPMHSYRLGT-----	DELGSSSAEK-----	DLGVTVDKKL DMSQQ
SR1	--VADHSYNLGN-----	SPLVVSQVEK-----	DLGVLVPYDLKSYAN
Sam3	--NNPKFVYTANG-----	IIIAKKS SVK-----	DLGIFVDDKLNFGHG
Sam6	--LNPKTDYLVNG-----	HKISVCSKAR-----	DLGIVVDDKLA FDKH
Dong	QPGDYTIDDTTQ-----	YGDGTKCLYK-----	YLGF-----QQLKGLD
DongAg1	LDADSFRA NEQEE-----	I-----RHMVQGETYK-----	FLGF-----LQLRGIH
Rex6Fr	IATDGVVELPEGN-----	ITDVQDTYK-----	YR-----ANGNH
Rex60I	VHTGGVSLPEGT-----	IADIEDSYK-----	YLGIPQANGNL
EhRLE1	LNAN--IHII E-----	GDDL YK-----	YLGVWQSDKID
EhRLE2	IQDNMKDIPVD-----	SEHQYK-----	YLGVYQFTRND
EhRLE3	INGELDELPRVT-----	NDNPYK-----	YLGIEIDKIN
NeSL	IKLKGNAIRCLDE-----	NTTYK-----	YLGVQTG-SAA
YURECi	LLLNGVEI PLLRP-----	GEHYK-----	YLGA-MTG-VMS
R2Ci-D	VRVGDS ELACLG P-----	NSTCR-----	YLGIFHG-MVG
R2Am	FEIGGFMT PVGV-----	TETWK-----	YLGA-YLG-QIG
R2Dr	WVLGGKALQLTNI-----	ENSIK-----	YLGVKVN-PWA
R2Ci-A	VHVGGVRI PAVAV-----	SGSYR-----	YLGVNIS-AAG
R2Ci-B	FKVNSQKIPALSI-----	TQQYK-----	YLGINID-AQG
R2Ci-C	LRVEGAKCGAMDI-----	EGTYK-----	YLGVRVG-AGD
R2Sciara	LLLKASELKPLTI-----	SDLWK-----	YLGVYVT-TSG
HERODr	FRLGQHQIPSVT-----	ERPVK-----	SLGKGV-TYITVRLN
HEROTn	FYLGGTQIPSVS-----	EKPVK-----	SLGK-MFDGSLK
HEROFr	FALGETPI PMVT-----	EKPVK-----	ILGK-VFNSSLR

RTE1	ADPSEVYFGSPSPT-----	TQLDDVDEYI----	YLGR--	RQINAGNN
RTE2	CRSQDVLFG-----	SPIIPVPGCR-----	YLGR--	WIDISGS
R2Dmel	QPKQKCTVLEAQSFYVGSS--EI-----	PSLKRTDEWK-----	YLG I--	NFTATGR
R2Dsim	QPKQKCTVLEAQSFYVGSR--EI-----	PSLKRTDEWK-----	YLG I--	NFTATGR
R2Dyak	QPKQKCTVLEAQSFVGSR--EI-----	PTLKRTDEWK-----	YLG I--	HFTASGR
R2Dmerc	QPKQKVTVVEQRFTFCIG-R-AR-----	VQLKRSEEWK-----	YLG I--	HFTADGR
R2ear	YPKLKTAVIVTEKYMLDR--HIL-----	PAIDREKLFH-----	YLG V--	PFTAAGR
R2Fa	YPKLKTAVIVTEKYMLDR--HIL-----	PAIDREKLFH-----	YLG V--	PFTAAGR
R2Bm	-HRKKHHYLTERTFNIGGK-----	PLRQVSCVERWR-----	YLG V--	DFEASGC
R2is	LGREKMI LDREPFLLEGVAI-----	PVYRWNNIYK-----	YLG I--	ETSPGAA
L1rat	-EKQAEKEIRETT-----	PFIDPNNIK-----	YLG V--	TLTKQVK
L1Mm	-NKQAEKEIRETT-----	PFSIVTNNIK-----	YLG V--	TLTKEVK
L1dog	-NETEEREIKESI-----	PFTIAPKSIR-----	YLG I--	NLTREVK
L1hs	-NRQTESQIMNEL-----	PFTIASKRIK-----	YLG I--	QLTRDVK
swimmermedaka	-NYSPPQNIKDEY-----	KWEWQADSIK-----	YLG I--	ALHKDFT
swimmerpupfish	-NFNPSTRIKNMY-----	KWIDSEHIK-----	YLG V--	VLTKDLS
SWDr1	---NAGRKIIFTS-----	LPFKITKDKFK-----	YLG I--	WITNKYK
Ta11	VDEDCKVWQAEL-----	GITNEGGAST-----	YLG L--	PECFSGSKV
ATLN60	TPQDIKRRVKLSLR-----	IDNEGGIGK-----	YLG L--	PEHFGRKR
KoshiFr1	GLPVLQNLAWR-----	QDGLK-----	YLG V--	FIGDEA
KoshiTn1	GLPVLQSLCWK-----	RDGFK-----	YLG V--	FLGDED
KoshiFr2	---LGGWWCWVQ-----	TGGLK-----	YLG V--	FLGNDE
KoshiTn2	EGLTLPGLQWR-----	SGGLR-----	YLG V--	FLGEES
KoshiDr1	AEPKLEGLTWT-----	KQGFK-----	YLG V--	FLGDEL
KoshiDr2	G-PMLPGNLQWG-----	RMGFK-----	YLG V--	FLGTDD
Tx1L	KVDLPPAFR-----	DISWESKIK-----	YLG V--	YLSAEE
MutsuDr2	KADILTDCFQFR-----	EVEE-LK-----	ILGIL----	IGKNER
MutsuDr3	KETDLAECTNFK-----	EVEE-IK-----	ILGVL----	MKDAR
MutsuDr1	RTEALSGHFTFK-----	EMDE-IK-----	ILGIV----	IGRDEK
DewaDr1	KVDVQQGNWEYK-----	EQKKYIN-----	ILGIT----	LYDEN
KenoDr1	WGNVVTEGLELT-----	FKENDFK-----	ILGVK----	FDKEG-
TRE3-B	NNIPQSKRIPITKK-----	DQSER-----	VLGYFF----	NHNGLH
TRE3-A	---YQPKNSNIYK-----	---SRK-----	ILGILL----	HRQRDN
TRE3-C	---DKPHDLPFQES-----	---TVPER-----	YLG LNF----	TKTGLN
TRE5-A	---WNRTL-YTVI-----	---KSNER-----	YLG FDF----	NNKGIK
Zorro-1	IGLYKLPFQKHHAD-----	---KPEIK-----	YMGVPL----	SP----
Zorro-3	PEISFLPYVSKKLQ-----	---LEKLT-----	YLG VPM----	KKADEE
slacs	---DTG-----	---FGTAVKRVAR-----	VLGA-YVAGDPMSEE	
CZAR	---PVDM-----	---PTEYIRPFAR-----	VLGA-GVANDPESEL	
CRE1	---TRVGI GG-----	---VDLPVVAEAR-----	ILGAHFRARGTPEAR	
CRE2	---VPEALSVSGR-----	---TIPAQGVVR-----	ILGAGFRG----	DTAS
GiIM	---TRVLKHSSFN-----	---LAQTSARRLHEHLAVLRASGLSLHDLRL		
GiIT	---TRILRDGPYN-----	---LGEQATRSLLGHLET LRAADLSRHDLRL		
BGR	RGLHLNPELFIHK-----	---KKIPVVKTK-----	FLGLTLDKFNFLPY	
Tad1	TRAPRTETLQLGD-----	---TVLQPTSTR-----	FLGVWDRKLN YRAH	
R2Nasonia	TWYTKNPGLEVNGN-----	---TVPSISPSETFK-----	YLGAKVSPWKGLLEG	
Cin4	PESLWSNLMEVF-----	---PGKYSNFP GK-----	YLG L--	PLHFRNIKR
R1tarana	KYRSLDLSHHLV-----	---GGIKVEKELK-----	YLG L I DSDLNFGSH	
Mosqul-Aa2	RHRVLQTPVMVNG-----	---CPIPCRKT MVILGVQLDRELRFDAH		
Y11i	---NIQDVATVGR-----	---VLC LFQ RVS-----	GLTLNPSKTVLQK	
BDDFcw	---ITSREIDG-----	---ETVETVSDFM-----	FLGS----	KITADGD
JAM1	DRARLGSSVTIDG-----	---DTFEVVDEFV-----	YLG SLLTADNNVSRE	
ING1	-TERHPLTLQLDG-----	---ERIGAD RTPK-----	LLGVT FQCLQGMATH	
L1Tc	YDREGRWPLVVAGCQIPV-----	---MTMGASRTTK-----	LLGMDLDPRLTLNVA	
SR2	---QDHPVLTLDGE-----			
R4	GAGGAQEAVEGAEGSRKGEI-----	---PILGLRSTYK-----	YLG V--	EQRLLPMEV
Zepp	IPLSTQPAATAALYT-----	---AIEKVEAR IARWSGFRLSLLGR-PLSTQPA		
Cn11	-----	---QEGFK-----	MLGT----	MVGKKEK
DualenU2	-RIGSGKICIGGHN-----	---IPYLPDPKPYR-----	YLG LWL THTLDWSHH	

DualenU1
DualenCr3
DualenCr1
DualenCr4

LSRSATDQSTLTARLSGARAVKIG-----ADATPYLPPDQPYKYLGVLI THTLNWSSH
LRSMLENKIHI GTTS-----IPYLPATEPFK----YLGVQVTMTLNWGPQ
MRRNMTNTIKI GTTP-----VPYFPPTQPYK----YLGVQLTFSLDWSAH
PACERTLKRFLDGGIHI GSNVKDGKLTKI ALPYVSPHKSYR----YLGVEI TMTMDWRPQ

Idt
I-DmeI
You
cgt_1_3
mgr583
mars1
R1DmeI
R1Dyak
R1Dmerc
R1Sc
TRAS1
R1Bm
RT1
RT2
SART1
LOA
Lian
TRIM
BILBO
JockeyDmeI
jockeydf
doc
F
CUTWORM
G
HelenaDyak
helenamau
BS
TART
AMY
JuanA
JuanC
strider
NCR1CTH
T1
Q
CR1
TurtCR1
SR1
Sam3
Sam6
Dong
DongAg1
Rex6Fr
Rex60I
EhRLE1
EhRLE2
EhRLE3
NeSL
YURECi
R2Ci-D
R2Am
R2Dr

INLLLPK-----LHNKLN I KCLSSLKF---NCNTHLLNVAKAT I IAKLEY
INLLLPK-----LHNKLN I KCLSSLKF---NCNTHLLNVAKAT I IAKLEY
CQTLRKQ-----LETRFNI I KFLSSKYS---YIHIKTL I D I TRALMLSK I DY
VDTKVAA-----AKKVAQFLRHLSNTKG---GLPAAAARLAVTACVLP TPLY
VAERAAK-----AMAVAAHLKSF GAVRY---GPPAAALRKA AVACVGS SATY
VENRIAA-----AGRALSSLLRLSTTEK---GLTLSNMRQLYQAC I LPV I DF
IASLRQR-----MTGVVGALARVLRADW---GFSPRARRT I YDGLMAPCVLF
IASLRQR-----MTGVVGALARVLRADW---GFSPRARRT I YDGLMAPCVLF
ITYIRDR-----LTGVVGALTRVLRVDW---GLSPQARRR I YAGLMVPCALF
FVYLRGK-----I LGLVGCLRRVMRKS W---GLGRRATC I LYKGLFVACMSY
VRNVCKK-----A I GMYK I LARTARV G W---GLSPEV I RV I YVAVVEPTVLY
AAAI GER-----ASRCFGKMSRVSASAW---GLRYRALRVLYMGTYVTTLTY
VREVTTR-----ARK I ADAVTRLLRNHS---G-PKTSKARLLASVAESV IRY
VTKVSEK-----ASRVAAVTRLMQNHS---G-PRTAKSRLLAYVAESV LRY
FDVLVPK-----LLGAAGALARLLPN I G---G-GGKSVRRLLYGVVRSMLY
VQNAMLK-----CSRALYTCRS I AGKSW---GTSPK I VRWLYLMVVRPMLTY
IDFRVKK-----ACMAFGQCRQTFGKTW---GLKPKY I KW I YTTVVR S I LAY
IEDRVKK-----ATVALYTCRKA I GLKW---GMTPY I VRWLYTA I I RP I MLY
IKDRVKK-----AT I ALYTCKKA I GLKW---GMNPR I VQW I YLA I VRP I LLY
ITNIQQA-----FRTKVARMSW I APRN---KLSLGCKVNI YKS I LAPCLFY
ITSLQHS-----FRTRI TKMNWLLAARN---KLSLDNKVK I YKCI VAPGLFY
IEAKSKH-----LKLKARNLHWL I NARS---PLSLEFKALLYNSVLKPI WTY
IEAKKTQ-----LKLKANNLHWL I NSGS---PLSLDHKVLLYNS I LKPI WTY
IFTKRKQ-----LGLTLRKFYWM I GRKS---QLRLENKLLVYKA I I KPI WTY
LAHLAHQ-----ADLRLKQLHWL I GKRS---KLRENKLLLYKA I I LKPI WTY
LKNAVKK-----CGRRSQQLRWLMNRRN---TSLRCKRAVYAHCI LP I WLY
LKNTVKK-----CGHRSQQQRWLMNRRS---TSMRCKRAVYAHCI VP I WLY
LKATTRR-----CYQRMQQLRWLLNRKS---TMTLRAKRAVYVHCVAP I WLY
VTKVVGK-----YLTAYRKMSW I LNERS---KLPTNTKML I LKSVLSP I WQY
IKSVRDR-----AAF I LGRLYPM I CKRS---KMSLRNKVTLYKTC I RPVMTY
IEGIQAK-----CNKY I KCLYPL I NRKS---KLCLKNKLL I FKQ I FRPAMLY
IESIQVK-----CNKY I KCLYPL I NRNS---RLCLKNKLL I YKQ I FRPAMLY
INNTIMK-----VNK I I CTLYPL I NRKS---KLS I SNKI I I FKPI FNP I LMY
VEYVTNR-----AHTALRQLYPL I SRNS---QLDVRNKLL I YKLA I RP I FTY
LDEVLLK-----ANRTLGF I LRFTS I FR---DQSFLRNLYALVVRP LLEY
IDDVVAR-----GNQLLGVV I RTTNEFR---NPMC I KAVYNC I VRSVLEY
CALAAQK-----ANG I LGS I MRGVASR---DREV I VPLYSALVRPHLEY
CALVAKK-----ANG I LGC I SKS I ASR---SREVI I XLYSALVRPHLEY
CDKNAFQ-----ANLALVTLKRI FGQF---DGRTFHI I FNSF I RPHLEY
ITYLTNA-----ALLKCRQLLKA FRST---NASLYFKLYNI YVQPI LDY
IHLIVNS-----A I FKSRI I LKTFRST---NALFYFKLFNI YVRP I LEF
HITIKQS-----LTSEYKRI NA I CKTK---LSGKHL I KALNTYA I P I LTY
YAVIKKE-----LQDKFLHRVSCI LKSF---LSVGNKVKA I NTFAVALLTY
EEATRRS-----ATGKYLERLRQ I LKCH---LNGKHD I QA I NAYALPVI RY
EQATRKA-----ATAKYLQRVRQVLR SQ---LNGKNKARA I NSYALPVI RY
NTSIVKN-----HQRKMI QKMEE I NTNE---SNNRRY I TR I NTEVI P I FRY
DVGCIER-----I SKS I EEG I KENKGN---DSSMNY I NR I NTE I I PKFTY
INKYCTR-----I LNDVSSI LSSLN TMK---YSSLNT I RK I NSDI I SKLRY
R-I SAMDL-----LEKVTKELECVVKS D---LTPPQKLDCLKTFTLSK LTY
VPRTGSQL-----IKDFRARLQRLFTSF---LTPHQKL I ALKRFLPSLSF
SCRIRRR-----E I RESLLRLASSA---LKPEQKVFMLRSFL I PRWRY
-IQPARL-----SLQTFLERI AKSP---LKPQQKLYL I RVHLLPKLI Y
GIEKPDLT-----V-ALDRWCKRI GKSL---LKPSQKVY I LNQFA I PRLFY

R2Ci-A	MRVDAAD-----SLASKLANLSRAP-----LKPQQRLYLCTHLLPSIYH
R2Ci-B	ARNDAAAR-----ILTEGLAELSRAP-----LKPQQRLYLLRVHLLPKLQH
R2Ci-C	TRAECKE-----KLMSDLKETTEAP-----LKPQQRIFILRNYILPRSLH
R2Sciara	P-EVAKV-----SMDDDLSKLTKGP-----LKPQQRIHLLKTFVLPKHLN
HERODr	DSDSIRET-----STNMKGWLKAVDKSG-----LPGIFKAWVYQHGILLRLLW
HEROTn	YAFSIRET-----NDQLGHWLTLVDKSG-----LPGKFKAWVYQHGILPRILW
HEROFr	DSDALLQA-----KADLTSWLTAIDKSG-----LPGKFKTWIYQHGVLPRLLW
RTE1	LMPEIHR-----RRRAAWAAFNGIKNTTDS-----ITDKKIRANLFDSIVLPALTY
RTE2	IDEEISR-----RIRAGWGALVGIKEVLR-----IMPNKERIILFKQNVLPALLY
R2Dmel	VRCNP-----AEDIGP-----KLQRLTKAP-----LKPQQRFALRTVLPQLYH
R2Dsim	VRCNP-----AEDIGP-----KLQRLTKAP-----LKPQQRMFALRTVLPQLYH
R2Dyak	VRCNP-----AEDIGP-----KLQRLSEAP-----LKPQQRFALWTVLPQLYH
R2Dmerc	ARYNP-----SEDIGP-----KLERLMQSP-----LKPQQKLFALRTVLPQLYH
R2ear	CRDDT-----IAHLKR-----KIDVLTAKP-----LKPQQRFALRVVLPSCYH
R2Fa	CRDDT-----IAHLKR-----KIDVLTAKP-----LKPQQRFALRVVLPSCYH
R2Bm	VTLEH-----SISS-----ALNNISRAP-----LKPQQRLEILRAHLIPRFQH
R2is	ARSVT-----GLRN-----RLSKLESAC-----LKPQQRMHLLRCYLLPGLYY
L1rat	DLYNKNFKT-----LRKEIEEDLRRWKDLP-----CSWIGRINIVKMAILPKAIY
L1Mm	DLYDKNFKS-----LKKEIKEDLRRWKDLP-----CSWIGRTNIVKMAILPKAIY
L1dog	DLYPQNYRT-----LLKEIEEDTKRWKNIP-----CSWIGRINIVKMSMLPRAIY
L1hs	DLFKENYKP-----LLNEIKEDTNKWNIP-----CSWVGRINIVKMAILPKVIY
swimmermedaka	KMFEVNYGP-----LNTKLQSDLQRWNAIP-----FLDLHSRVIDSRMNILPRMLY
swimmerpupfish	KLVDANYGP-----ITSKVKSDLQRWNTVP-----FLNLYSRVESIRMNILPRMLY
SWDr1	HLYKVNFP-----LIDSIKKDLERWNPLP-----LSLGGRIINTIKMNILPRCLY
Ta11	QLLDY-----IKDRLKTRLSGWFART-----LSMGGKETLLKAFALALLFY
ATLN60	DIFSS-----IVDRIRQRSHSWSIRF-----LSSAGKQILLKAVLSSMPSY
KoshiFr1	T-MKRNLWLD-----IERVEGKIEKWKWLLP-----RMSYRGRTLVPNNLVSVLWH
KoshiTn1	T-EKKNWEDI-----PGKVEGKLNKWRWLLKS-----QMSYRGRVLVNNLVASMLWH
KoshiFr2	S-LKKNWEGV-----LEAVEGRLKRWKWLLP-----HMSYRGRTLVINNLVSSFLWH
KoshiTn2	F-MRRNWEDS-----LEKTRGKLEKWKWLLP-----KMSFRGRTLIIINNVSSSLWH
KoshiDr1	I-MQKNFEDI-----IEKVRGRLERWKFLLS-----KISYKGRVLIINNLIASALWH
KoshiDr2	F-IKQNWEG-----VEKVCARLSRWRWLLP-----QLSYRGRVLI CNNLVASSLWH
Tx1L	YPVSNQFIEL-----EECVLTRLGKWKGFAP-----VLSMRGRALVINQLVASQIY
MutsuDr2	KATEKMDDL-----IRGIESRLNFRMRREL-----CLKGKALILNVLMTSKLWY
MutsuDr3	KARDKMWEGF-----LTDIERRLNKYKLRTEL-----TLKGKVLILNVLMEKSLWH
MutsuDr1	KAETMWEEI-----LGGIERRLRFWKLMSL-----TLKGRVLI LSVLMVSKLWN
DewaDr1	KTREIWDDEL-----INKMEKRLCFWKQRVL-----FLKGKVLVLSLFLSKMWWY
KenoDr1	-GGQNWNDI-----LTKVNQKLGFWGLQKL-----TMEGKILIFKSVILPLILL
TRE3-B	RKLPETMKT-----LISKSLVLWKTSGT-----TLKTKTTIINTYSLSPIY
TRE3-A	KKNARNIKHN-----KIJLSTMENHFLN-----NQNQNQPSSKAFALSCLTY
TRE3-C	SKYN-TLIQE-----MKNNLIKWKSQA-----TMKAKMTILKTYVLSCLTY
TRE5-A	SKIN-TISDN-----IRAKLVTWNSTSS-----TYMGRILMAKTYALSCLTF
Zorro-1	-KLKLTFLKN-----WTKNLHTAVNLDL-----PLQQRALGINTYLISKLHY
Zorro-3	FDPWTLFVLN-----LNAQIRMTPIIDL-----PYQLIMKLMNIFIFSKLYY
slacs	I REGVEK-----KAMETDRLFKAVELP-----LYNRTRWRILAMSAMPRIY
CZAR	ITQFVQR-----KAEETDRLFRAVELP-----FAKHTQVRLLSVSALPRVTF
CRE1	TIEWLQA-----AVEKWRPIHQKLRQDI-----IPKNIAMMMTRISLGSKMTF
CRE2	VEEWVWE-----KTKTHDHYFEKLQSEW-----LPRLARLQLLRGSTVPRLNH
GiIM	LSACVPAVNYGPLVDDYPGSPYADVDAQIVEEVAT-----LLEIPEPLAKTLALTPRAKY
GiIT	LAACIVPSVNYGPLVDAYPGPHSYADVDAAVVAEVAG-----LLSIDPQQARALALTPRSNY
BGR	IKELKKK-----GQKSLNILRVLSHTDW-----GADRDTLLLLYRSLIRSKLDY
Tad1	AEAVKQK-----MTTQTNALTRLAAKTW-----GCSFARAREIYTKCIRSAIAY
R2Nasonia	FESDAFR-----EVI SRVQRLP-----LKPMPQKVDLLQMIYFPRYTY
Cin4	IEFQP-----LIEKINKRLAGWKGR-----LSKAGRETLVKSVLTAQPIY
R1tarana	FKAVSAR-----VNRVFNHLSRSMVVRAN-----GICPDARTYYHQVLRQWMSY
Mosqul-Aa2	LNAIKRN-----YQTRINLLRTLKSPHKS-----SNRDLVRIAKSINSRLFY
Yili	IGPPDCFVP-----LTFIDA EWQRTIDATWP-----TDNNTQAPLTRTSDNIFRY
BDDFCow	CSHEIKRCLLLG-----RKVMTNLDSEIFKSRD-----ITLPTKVRLVKAMVFPVVIY
JAM1	IRRRIS-----GSRAYYGLQKKLRSRK-----IQPRTKCTMYKTLIRPVVLY

INGI
L1Tc
SR2
R4
Zepp
Cn11
DualenU2
DualenU1
DualenCr3
DualenCr1
DualenCr4

AAETRRK-----MDFRILQIAAISASTW---GPRRQVLR AFYLALVQAHTMY
ATKQCAA-----TSQRISQLRSIAHKEA---GPSPHDLRFTVI GYGASKLRY
-----QIEVVEKFVYLGSYIS---AGGGVSD EIDARIMKARAAY
ALKEF-----EDKFM DRAETIFASE-----LTWGQMATAYNTIAIAGLRY
AAATALYTA-----IIEKVEAR IARWSGFR-----LSLLGRAYVAKQVLASMTY
RAEFLEG-----RIRKEMAKVGKLD---LPHQHALLLRF C IQQNLRH
IVYMRET-----LIERCDKICHSLA---SPTNKLLMLKYSAKPAITS
TKVVYDQ-----ARYKCVKVMESLAS---PRQCLAMVQHCVKPAITY
FAYLCKN-----ITDKSLSLQTCQAS---PEQCLRIKSCIQSVAAY
VARVTEI-----VKDKGTAIATSLA---TPAQR LRM IQQCVHTTVAY
LKAVKTD-----LTDAGEELSKYK LPR-----QCYMLIKQCLKAKVAY

ldt
l-Dmel
You
cgt_1_3
mgr583
mars1
R1Dmel
R1Dyak
R1Dmerc
R1Sc
TRAS1
R1Bm
RT1
RT2
SART1
LOA
Lian
TRIM
BILBO
JockeyDmel
jockeydf
doc
F
CUTWORM
G
HelenaDyak
helenamau
BS
TART
AMY
JuanA
JuanC
strider
NCR1CTH
T1
Q
CR1
TurtCR1
SR1
Sam3
Sam6
Dong
DongAg1
Rex6Fr
Rex60l
EhRLE1

GL----FLYGH-----APKSI LNKIKTPFN SAIRLAL
GL----FLYGH-----APKSI LNKIKTPFN SAIRLAL
GLPIFGW-----CAKSHLKKLQVPYHGAVRRAI
GA--ETWYAGLKRPARNSSTNATSSSASNQIATIST---RQKGLVKRVEKVI TAAAWAIL
AA--EAWYN---PAHK-----QRGLL KALNKPLVLAARA IL
GS--EVWWKG---YN-----QDYLVKRIQLVQNTASRRIL
GA--PVWYDTAE-----QVAAQRRLASCQRL ILLGCL
GA--PVWYDTAG-----QVAAQRRLASCQRL ILLGCL
GA--SVWYKMAMR-----LVGARRALKSCHRRILLGCL
GA--SVWFRTL R-----FSYASILLNRCQRLVLYASL
AA--AVWHESVY-----KLG VQKQLNVIQRGFAQKLC
AA--AVWYLRAA-----VHVVRSVLLRTRQPSL TLLT
AA--PIWHGEVT-----KRECRRL LERVQRVSARRVA
AA--PVWAEATQ-----VRECRRLQRVQRKAAIRVA
GA--PVWSPTLS-----ARNAALLQRVQRVLAVRVV
GV--IAWGDRAR-----LITVKKQLQKLQRMACVCM T
G--CVWWQKGE-----VRTIQSKLGH LHRMCLMAMS
GV--VWWPALD-----RRTCLNKL SRVQRMAELCIT
G--VTVWWTALS-----KGTITKQLSKVQRTAALSIS
GL--QVYGIAA-----KSHLNKIRILQAKTLRRIS
AI--QVYGIAA-----RTHLNKIRVLQAKMLRKIS
GS--ELWGNAS-----RSNIDIQRAQSRILRIT
GS--QLWGNAS-----NSNIDIQRAQSKILRTIT
GI--QLWGTAS-----HSNIEIQRFQNKLLRTIT
GI--QLWGTAS-----ISNRNRQRFQNKVPESIA
GI--QIWGIAA-----KSNYKRQVMQNRALRQIT
GI--QIWGIAA-----KSNYNRQVMQNRALRQIT
GI--QIWGIAA-----KSNYNRQV LQNRAMRAIT
AI--AAWGPLVT-----DAQIRRIQVEENRKM RDIC
AS--VVF AHAA-----RTHIDTLQSLQSRFCRLAV
AV--PIWTSCC-----NTRKKALQR I QNKILKMIL
AV--PIWTSCC-----LTRKKLQR I QNKILKMIP
GS--PVWGRCA-----QTHIKKLQIQCNKLLKLIM
GC--SAFGSMA-----KTHLQKLQVLQNKFLRIVL
AS--I IWNPPTI-----DGCSR IESIQRLFTRVAF
SC--VWSPPTA-----SSIARIEAIQRKLTRYAL
CV--QVWRPQYK-----KDRELLERVQR RATK-MI
CV--QFWAPHYK-----KDVXKLERVQR RATK-MI
GN--IVFPPSLQ-----KDKDTLERIQRRATK-SV
GC--E IYSPTSG-----ALIKQLEKPLRFFTR-RV
GC--EVFNPKLK-----SLSEKLEK PQRYSR-LV
SFG--II-----KWSKTDIEQIERIQDYIQK
SFGVM-----KWSNTDLEALERTIRVVST
PAGII-----PWPLEEIQATDIKTRKLLT
PAGII-----RWPKEEIQTTDVKTRKLLT
SASVV-----N

EhRLE2	SASVV	KLPIMKLEIDKMIRIEVK
EhRLE3	GFCIV	PWKLGELEKIDKQIRKSLI
NeSL	MYGNS	IPLITEIKMFANIVIRGVK
YURECi	HLRVR	PIARSELIALDRRVRECLR
R2Ci-D	SVTLT	RVTVSFLSWIDRVVRMRVR
R2Am	PLVMA	PIRASMLNKLDRMVRVALT
R2Dr	LADHG	GAGDVMLQNL DGTIRKAVK
R2Ci-A	QLVLS	STSKKFLKYLDRCVRAVVR
R2Ci-B	GLVLS	SCAKRALTYLDKSVRSAIR
R2Ci-C	ILTFT	NTTARLLKQLDSAIRIHVR
R2Sciara	RLVLS	RTTATGLCKMDLLIRKYVR
HERODr	PLLIY	EVPMTVVEGFELKVS CYLR
HEROTn	PLLVY	EFPSTVEGLERRVSSCLR
HEROFr	PLLVY	KVPMSTVETLKQNI SQFLR
RTE1	GS--EAWFTKALS	ERVRITHASLERRLVGITL
RTE2	AS--ETW	TCNAGSTLRLKRTVSGLID
R2DmeI	KL--AL	GSVAIGVLRKTDKLRYYVR
R2Dsim	KL--AL	GSVAIGVLRKTDKLRYYVR
R2Dyak	KL--SL	GSVTIGVLRKTDKLRFYVR
R2Dmerc	KL--TL	GSVALGVLRKCDKLRVSFAR
R2ear	IL--TL	GGSNLSLLKKIDL MVR AAGR
R2Fa	ILTL	GGSNLSLLKKIDL MVR AAGR
R2Bm	GF--VL	GNISDDRRLRMLDVQIRKAVG
R2is	GL--IH	QGISVGLLRSADKQVRAAAR
L1rat	RF--NA	IPIKIPIQFFKELDR TICKFIW
L1Mm	RF--NA	IPIKIPTQFFNELEGAICKFIW
L1dog	TF--NA	IPIKIPWTFKLEEQIILKFVW
L1hs	RF--NA	IPIKLPMTFFTELEKTTLKFIW
swimmermedaka	LF--QC	LPFPIPQKQFVEWDKMLSRYIW
swimmerpupfish	LF--QC	LPVKIPQKYFDDWDRMLAKYIR
SWDr1	LFQC	IPVFLTKSFFLLLDKLISSFIW
Ta11	AMSCFKL	TKTTCVNMTSAMSDFWW
ATLN60	AMMCFKL	PASLCKQIQSVLTRFWW
KoshiFr1	RL	NCLEPPSGLLAQVQR-VLNFFW
KoshiTn1	RL	ACLQPPPGLLDQIQKIVDFFW
KoshiFr2	RL	AVDPPADLLSRVQTVIVDFLW
KoshiTn2	KL	TVVEPPAPLLSQIQRVLVDFIW
KoshiDr1	RL	ICVDPPSDLLIKLQSLLDFFW
KoshiDr2	KM	MILEPPRDLVARIQKQLDFFW
Tx1L	RL	ICLSPTQEFIAKIQRRLLDFLW
MutsuDr2	KL	YVTEMPCWIEARLKCKVQDFLW
MutsuDr3	VL	YVLEMPMWIEKRLKCKCFTDFLW
MutsuDr1	IL	YVSSMPLWMEKRLKQCFLDFLW
DewaDr1	VL	SVVSLPTWVYKCLKTMI LNFLW
KenoDr1	VS	SVFSPPRRFIRKLERAVFYFLW
TRE3-B	LS	YLEEFTKDEEQIQINKLISWFMN
TRE3-A	YS	YVENFKEEELNQINKLVEWFLS
TRE3-C	HQ	YMDNLNEEQIEENNMTRWFLF
TRE5-A	HT	YIN-TTPQHNSIENNVKFVFN
Zorro-1	QD	TLASFQSEINKIALQMNQCFR
Zorro-3	RD	LHSPILT
slacs	LLRNHDM	QHTHRVA SWFDERTTQVMEHIL
GZAR	LLRTHAP	AHTRAAASGTTASPASWASSW
CRE1	LLQTHSP	QELETAAKTADDEVEQTLQHLM
CRE2	LLRTHKP	EELNRSTTWFDERVMETALNIA
GiIM	GLGLVLP HHYYDEMHR	QRQDMKAGVFRELRKKRLQDTA
GiIT	GLGLVLP GHYHADMQQ	QRREMAAGTFRELRKRRIKQSA
BGR	G	
Tad1	GA--SAFHQPTEV	YGKPRGIVIGLAKYQTKCLRVA

R2Nasonia	GLITS-----	PPAKAVLKTIDRIIRTRIK
Cin4	LL---TV-----	FPAQKWLLKRIDKIRRNFLW
R1tarana	GA--AIWFPGH-----	IKKFYDRFNAIQRSALILAT
Mosqul-Aa2	GIELFGLAG-----	DTLITRLAPTYNQSIRIIA
Ylli	LG-----	VHFGNRERLDTHYAQIKE
BDDFcow	GGESWTVKKAEH-----	WRIDAFELWCWRRLRVVWT
JAM1	EH--EAWTML-----	EEDLQALGVFERRVLRITF
ING1	GI--EVWYWDAS-----	ERSRDLASAQHKASRIIA
L1Tc	GSE-LIWAVAT-----	DSAKNEMQKTYATLARIVS
SR2	AN-----	LGHWRLRDVS-----
R4	VYS-NT-----	NGASPKLLEALKRAATLDTR
Zepp	HA---TF-----	IPVPQDLLQRLCRAIHTFVA
Cn11	LQRSLRS-----	DDLVDLWERLDTMLWEEVK
DualenU2	CFH-----	AAVMSPADLGKLDALAKATK
DualenU1	SFH-----	IAALTPADITLLDALLVKTAK
DualenCr3	SFA-----	VMPYTENDIRTLDNMIARLAR
DualenCr1	GFA-----	AMPFTKQDITTLDTTLAGYAK
DualenCr4	SLP-----	AMAYTQHDIRALDAQIAGITR

Idt	GAYRS-----	TPINNLLYESNTP-----	PLEM---KR
I-Dme1	GAYRS-----	TPINNLLYESNTP-----	PLEM---KR
You	HAFPT-----	SPVACTLAESGLP-----	SIQS---RV
cgt_1_3	PVWQT-----	TSTSSLLRDAGLP-----	TAKV---AL
mgr583	PAYKT-----	TPSSTVLRDAGLP-----	SARV---AL
mars1	GAFRT-----	TPTDLLDVEAALL-----	PASI---RL
R1Dme1	SVCRT-----	VSTVALQVLGGAP-----	PLDL---AA
R1Dyak	SACRT-----	VSTVALQVLGGAP-----	PLDL---AA
R1Dmerc	PTCRT-----	VSTDALEVLAGAP-----	PLDL---VA
R1Sc	NVCRT-----	VSTERMQVLHGEL-----	PWDL---EA
TRAS1	RAYRT-----	VSLNSALLMAGIL-----	PLDL---RV
R1Bm	KAYRS-----	CSTAALPVLAVGL-----	PADL---EV
RT1	RTFRT-----	VRYETATLLAGLT-----	PICL---LI
RT2	RAFRT-----	VRYETATLLAGLV-----	PICH---LI
SART1	RGYRT-----	I STEVACALAGSL-----	PWEY---EA
LOA	GVMCT-----	CPTMALEALMELT-----	PLHH---II-
Lian	GAFST-----	TPTAALEAIFDVA-----	PLHI---YL-
TRIM	GGLRT-----	TPGEALDTVLDLL-----	PVDL---MG
BILB0	GALST-----	TPTDALNAIICLQ-----	SPEL---AG
JockeyDme1	GAPWY-----	MRTRDIERDLKVP-----	KLGD---KL
jockeydf	GAPWY-----	MRTRDIECDLKVP-----	KIGD---KI
doc	GAPWY-----	LRNENIHRDLK-----	IK-LVIE-VI
F	GAPWY-----	VRSENIQRDLN-----	IP-SVTN-AI
CUTWORM	NAPWF-----	VPNEALHRDLN-----	MP-TVKE-EI
G	DAHYP-----	HENSVIHKELG-----	MP-WVAEE-ISR
HelenaDyak	NCPWY-----	VRNSTLHKDLNLY-----	TVEE---QI
helenamau	NCPWY-----	VPNSTLHKDLNIH-----	TVES---QI
BS	DCPYY-----	VRGTTLHRDLNLH-----	TVEE---QI
TART	RAGRY-----	TKNQTIRDRYCVK-----	TVEE---FY
AMY	GAPWF-----	VRNVDLHDDLGLE-----	SIR---KY
JuanA	RLPPW-----	YSTNELHRISMLK-----	HWNK---CQ
JuanC	KLPPW-----	FSTSELHQLAEVD-----	TLD---VM
strider	NLPYY-----	TNTKYLHIKAGVQ-----	KVQ---
NCR1CTH	NKTRY-----	ERITDLHTEAKIP-----	SIEG---SR
T1	RRLFG--AAS-----	LPPYETRLQLFNLH-----	SLSF---RR
Q	RLLPWQDRNN-----	LPPYAARCRLGLE-----	PLSV---RR
CR1	RGLEH-----	LPYEDRLRELGLF-----	SLEK---RR
TurtCR1	RGLEH-----	KTYEERLRELGLF-----	SLQK---RR
SR1	RGLKF-----	KPYEERLQSLNLY-----	PLEY---RR

Sam3	FQRCN	IKYSSYEDRLAQANLK	SVQH	RR
Sam6	FKRCK	ISYESYADRLIQVNQT	TLKH	HR
Dong	HNNLH	PKSAIERLTIK		
DongAg1	KHQMR	HPKASVERVILP		
Rex6Fr	MQGGF	HPKSSVL		
Rex60l	MHGGF	HPKSSTLRLYAS		
EhRLE1				
EhRLE2	ERLLE	QECVRVDYM		
EhRLE3	QLQLY	SRNIPKSRLFVK		
NeSL		VMHRIPVRGSPLEYIHL P		
YURECi		VAFR LTKP-SCQAVFHTP		
R2Ci-D		A I LHAPHNLSSEWLHLS		
R2Am	G	KDGI LHL PQSVPSAFFYAP		
R2Dr		KWLHLPPSTCNGLLYAR		
R2Ci-A		RWLRLPKDTPKAYFHAK		
R2Ci-B		RWLTLPKDTPTAFYHAK		
R2Ci-C		RWLKLPKDTPLGYLYSD		
R2Sciara		RWLRLPGDVPVAFLYAP		
HERODr		RWLG LPRSLSN I GLYGN		
HEROTn		RWLG LPRSLSSNALYGN		
HEROFr		RWLGFPQSLSSIALYGH		
RTE1	TQQRERD	LHREDIR TMSLVRDPLN		F
RTE2	AAEIRG	WNFNLDRYLLA		
R2Dmel	RWLN	LPLDVP IAFVH		
R2Dsim	RWLN	LPLDMP IAF I H		
R2Dyak	RWLN	LPSDVP IAFVH		
R2Dmerc	KLLG	LPLDVSVAFYH		
R2ear	KWCC	LPKDTPNAYFH		
R2Fa	KWCC	LPKDTPNAYFH		
R2Bm	QWLR	LPADV PKAYYH		
R2is	KILH	LPGDVPVPLFN		
L1rat	NN	KKPRIAKA I LN		
L1Mm	NN	KKPRIAKTLLK		
L1dog	NQ	KKPRMAGG I LG		
L1hs	NQ	KRAH I AKSTLS		
swimmermedaka	RG	KKPRIKYKTLQ		
swimmerpupfish	QH	KRARVKYKTLQ		
SWDr1	NG	KN		
Ta11	NALEHKR	KTHWVSCEKMC		
ATLN60	DSKPKDR	KMAWVSWDKLT		
KoshiFr1	NG	IYVHQGVLY		
KoshiTn1	DK	KHWVPQGVLF		
KoshiFr2	DR	LHWLPQVVLF		
KoshiTn2	DK	LHWIPQSVLF		
KoshiDr1	DK	MHWVQKAI LY		
KoshiDr2	SG	QHWLRASVLY		
Tx1L	IG	KHWVSAGVSS		
MutsuDr2	EGK	PPRIAYNT I I		
MutsuDr3	GGK	PPRIAFNTVV		
MutsuDr1	EGK	PPRIAYATL I		
DewaDr1	DDK	PSK IAYNT I I		
KenoDr1	GSK	WERLRRTELK		
TRE3-B	SPA	NSE		
TRE3-A	APN	NKN		
TRE3-C	SSV	KNT		
TRE5-A	TKS	KNS		
Zorro-1	G			
Zorro-3				
slacs	GQ	PMTERARN I AA		

CZAR	TA	PSRS-AHAHCG	
CRE1	GQ	VEITPRARLLAQ	
CRE2	NI GDRRNADDGDP	GHTPPDPLRETRLLVR	
GiIM	ALRSFLPLALLG	CAPLDNTQVLFIGD	CLAGRY
GiIT	PLRSFLPLALLR	GPPLNNDQVLFVGE	CLLGRY
BGR			
Tad1	GAYKA	TPVRNLETETFCPPLDL	Y
R2Nasonia	EILHL	PESVSSSFLYTP	
Cin4	KGEN	LDSCSGGHCLINWATTC	
R1tarana	RAYPR	ALLRHYYRRSVASCQDLQM	W
Mosqul-Aa2	GLLPS	TPADAACVELGVLV	
Y11i	DLKES	LRRLSLW	
BDDFcow	ARRSNQS	ILKEISPGCSLEGLMLK	
JAM1	GRRAGERR	VAAAPRARSTLRRTQYREG	
ING1	GIPHG	TRKEDSLLEANLLPLKT	
L1Tc	GVPST	VDPE SALLEANMPPLHV	L
SR2			
R4	IRDLLR	RHKCFRNSFVER	L
Zepp	ANRP	VTPGAAAALFP	SKDVC
Cn11	RMRMR	QREDTAEFEALGRS	LT
DualenU2	HSHML	PKSTPTISVLLP	
DualenU1	HCYAL	PAYTPNAAVLLP	
DualenCr3	TCYR	LSRGFPTRAVLTP	
DualenCr1	RCYG	LPRSFPTRTSLLP	
DualenCr4	RCVG	LPRDCATRAILLP	

ldt	---	DLQIAK-LSQN	
l-DmeI	---	DLQIAK-LSQN	
You	EE-	TTLMLIPKLYTT	
cgt_1_3	---	EGVRLR-FATR	
mgr583	---	AYTRLK-YGAR	
mars1	---	QYNQRR-YAVR	
R1DmeI	---	KLLAIK-YKLK	
R1Dyak	---	KQLAVN-YKLK	
R1Dmerc	---	MRTAMQ-FKLK	
R1Sc	---	TRRGLL-SEFR	
TRAS1	---	REAASL-FEAK	
R1Bm	---	TRAGR-R-MREC	
RT1	EE-	DARVFERVNDPG	
RT2	NE-	DARVHQQLLAPD	
SART1	EV-	LAAYVYRRRAQSL	
LOA	---	RLKQKA-TLLR	
Lian	---	KQEALS-CSYR	
TRIM	---	KKVATL-AALR	
BILB0	---	KEQAEM-AAIR	
JockeyDmeI	---	QNI AQK-YMER	
jockeydf	---	REVAKK-YHER	
doc	---	AEKTK-YNEK	
F	---	TELKEK-YL	
CUTWORM	---	QSLMKT-YKER	
G	---	FSEF	
HelenaDyak	---	GRHTSR-YSDR	
helenamau	---	GRHTCR-YSDR	
BS	---	SKHTSR-YSDR	
TART	---	QQAVHR-FSET	
AMY	---	MKSASERYFDK	
JuanA	---	IQSLIISGKNR	
JuanC	---	SNKIIDAFRQK	

strider	---QKIQY---
NCR1CTH	---RKVASESSTVS---
T1	QV-SQACFI GGLLS---
Q	RN-AQCSFI AGLLNG---
CR1	---LRGDLIAAFQYL---
TurtCR1	---MRGDLIAAFNYL---
SR1	---LRGDLLMTYSIL---
Sam3	---VLQILRTHYHNI I---
Sam6	---LLLIAKTYHDIV---
Dong	---RQDGGGRGMIDIWHL---
DongAg1	---RKIGGVGIDIQA---
Rex6Fr	---GRGLVSVRTTVL---
Rex60l	---RKEGGRGLVSVEATI Q---
EhRLE1	-----
EhRLE2	-----
EhRLE3	---KNELGLGLMSPRDECG---
NeSL	---VKDGGGLGVACPKTTCMI TFLVSTLKKLWSD---
YURECi	---TMDGGLGVPSVCSE---
R2Ci-D	---IAKGGLGIPCMVEE---
R2Am	---IGEGGLGLMELRTS---
R2Dr	---NCNGGLGICKLTR---
R2Ci-A	---CNDGGLGVPELQRV I PLQKAGRWLKMTRSQDPVVQAAVGL EYFQKLLERWSTPELYQ
R2Ci-B	---ACDGGGLG I TRLEHT I P I LKRNRMKLTLS EDPV I MELVKLTYFTNLLHKYSNVKLLN
R2Ci-C	---YKGGGLGVPRLLSRVPLL---
R2Sciara	---VKAGGKGI PCLKQWI---
HERODr	---TNKCLKPFGSVREEL I VARTREHL-----KVSRAETVVRKGRKWRAAEAVKQAA
HEROTn	---NNKLTLPFSSLAEEFMVTRAREVLQYRESKDPKVALAG I EVRTGRRWRAQEAVDQAE
HEROFr	---STMLQLP I SGLSEEFMVTHAREQVMYWDSSDTKVATAG I LVKTGRKWEAQKAVDRAE
RTE1	VKKRKLGWAGHVARRKDGRW
RTE2	---KQSRFTGHI LRRDPNRW---
R2Dmel	-APPKSGGLGIPSLRWW-
R2Dsim	-APPKSGGLGIPSLRWW-
R2Dyak	-APPKCGGLGIPSLRWW-
R2Dmerc	-APHSCGGLGIPSVRW I-
R2ear	-ASSRDGGLGLPSMRWL-
R2Fa	-ASSRDGGLGLPSMRWL-
R2Bm	-AAVQDGGGLAIPSVRAT-
R2is	-EKSALGGLGLVELEVK-
L1rat	-NKRTSGG I T I PELKQY-
L1Mm	-DKRTSGG I TMPDLKLY-
L1dog	-KKTMSGG I SMPDFRLY-
L1hs	-QKNKAGG I TLPDFKLY-
swimmermedaka	-LKTQQGGRNLPCLQDY-
swimmerpupfish	-LAKEGGLGLPCLKEY-
SWDr1	-----
Ta11	-LSKENGGLGFRDI ESF-
ATLN60	-LPINEGGLGFREIEAK-
KoshiFr1	-LPREEGGQDL IHPASR-
KoshiTn1	-LPREEGGQGL IHVASR-
KoshiFr2	-LPKEEGGQGLVHLASK-
KoshiTn2	-LPKEEGGQGLVHLASR-
KoshiDr1	-LPKEEGGHLMHI QSR-
KoshiDr2	-LPIQEGGQGLVDIGSR-
Tx1L	-LPLKEGGQGVVCI RSQ-
MutsuDr2	-GATEEGG I GLMDIKQ-
MutsuDr3	-GEIDKGGLGLIDVEQ-
MutsuDr1	-GEVGKGGGLGLIDVEQ-
DewaDr1	-GKVDEGGLRLIDPWI-
KenoDr1	-KKPEHGGKGLPDPHLF-

TRE3-B	-----
TRE3-A	-----
TRE3-C	-----
TRE5-A	-----
Zorro-1	-----
Zorro-3	-----
slacs	-LPVSMGGCGIRMAQV-----
CZAR	-HPGAPGGCGLRRQREI-----
CRE1	-LPIREGGLGLRRSSEI-----
CRE2	-LPMAMGGLGLRSQKPI-----
GiIM	QRGRPMGTCCCHKQPFLPRHHLVCKAINGIHVARHDKI-----
GiIT	QKSVVLGTCSFCKQPMRPRHLLCKA-----
BGR	-----
Tad1	L---NKRVRA-FEER-----
R2Nasonia	---RKQGGLLLEVEKM-----
Cin4	-LPKNKGGLGILDLERF-----
R1tarana	R---SVYNTQLLHL-----
Mosqul-Aa2	---FRYQATETLCCRTIA-----
Y11i	-----
BDDFcow	---LKLQYFSHLMRKYDLIG-----
JAM1	---TKAGRIRWAGHVARMPPDNNP-----
INGI	---TTLVRSMKFMLMCESTR-----
L1Tc	C---LRARLSIFENT-----
SR2	-----
R4	YIPRECGGYGLKSVEDT-----
Zepp	FRAAAHGGIALVDIKAQ-----
Cn11	KLPARLGGLGLLSFKDV-----
DualenU2	---HRRMGLGLTSLLDVY-----
DualenU1	---TDKMGLGLMSLLRDY-----
DualenCr3	---AEMSGLGVGSLLPIY-----
DualenCr1	---ANEYGLGLGSLLPQY-----
DualenCr4	---AEMGGLGIGSLREEY-----
ldt	-----
l-DmeI	-----
You	-----
cgt_1_3	-----
mgr583	-----
mars1	-----
R1DmeI	-----
R1Dyak	-----
R1Dmerc	-----
R1Sc	-----
TRAS1	-----
R1Bm	-----
RT1	-----
RT2	-----
SART1	-----
LOA	-----
Lian	-----
TRIM	-----
BILBO	-----
JockeyDmeI	-----
jockeydf	-----
doc	-----
F	-----
CUTWORM	-----
G	-----

