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 WS I D P PTH S EFA L L $\begin{array}{llllll}\text { D } & \text { K A } & H & S & R & R \\ V & Q\end{array}$ K WT I DP THSSE E Y TLDPAH

## E $\begin{array}{r}\text { W } \\ \text { Y }\end{array}$

YNI DPAHSNV
K W
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K WVL
K WVVV D A P H S S WKI D P GH T E V

WK I DPAHSSA
KWNID P A HS RIG F S TR H A MVA




K WT D PA H WT L D M S H WTVDPTH WRI DP A H S QVV WT I D P V H S S $\quad$ G F V A R H A M V T
K WVVL $\begin{array}{llllll}\text { D } & P & \mathrm{~V} & \mathrm{H} & S & S \\ D & H & S & \mathrm{~T}\end{array}$ WTII $\begin{array}{llllll}\text { D P A H S S } \\ \text { Y K } \\ \text { D P A }\end{array}$
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KWAIIDPTHSE WTVD P A H S SVVA A VAAR H LGGIGSSVVRGRRFA A F S G T V E I A P D YE L D A A H K R V G F V V K H L M V S K V R G Q FA EAA S A T I T I G E N

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 ${ }^{3}+{ }^{2}$ RDPWGNDRAVFSARGKINRKDFGLTWNATLETGGFLVGDK EDVMGDTRGGFSATTTLNRYDFGUTHNPLEAGGLLISKR QDPWDNHRAVFSARGRIDREDWGLTWNMPLAKGGLLVSKE TDPFGNDKAGFKVTGAADRTDWGLDWNGTLAAGGLLVGNE KDPGGNEKAGFTVTGTVNRKDYG|VWNVALAEGGLVLVGEE EDPWGNTKAGFTISGK।品



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E Y
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WTID ATHSAVAFSVVRLMVSKVRGNFETFSGADTVDEN
E Y LFDGSHSEVGFSVRHAGI SKVRGNFDTVDAALQIGS S
WT L D P A H T $\quad$ R 1 G F A A R R H A M M V T
EY D A SHSRI GFVARHAMVTKVRGSFNEFDGAFTVDED
VK
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N

KWSLDPM
WDI DASHSTVGFSVRHMMVSKVRGYFTKFSGEVVTAEN
$Y$ VLDPSHTEI GFVARHAMVTKVRGSFEDFEAKIVIDTN

Y DLEPNHTFPRFAINHLGGSTFHGQFDKTSGTATIDLA



FEVVDASHS QVGFSVVKHLVI SNVKGSFQKFTGKFTFDEK
WNLDSAHS ELEFKVKHMMLSNVK GLFQDFE EQLEGNED
WNL D P N H T E V V K F K V K K H L V I S S V V T G Y F S N F N G TVVE T T Q D
Y TVVP EHSSAQFKVRHLMVSHVKGGFGKVSGVV IVD D
Y TVDASHSSASFTVRHAGISKVRGNVPITSATITIADA

WTIDPAHSRFGFAVRHAMVATVRGSFRSFEGTLHLDGF
FDLDPAHT TVGFTARHAMVTKVRGKFDEFESTVVVDQN

K WVI D P THSEVVSFKVKHLVI STVVTGFFKKFEGAAES ES D

YKFDTTHQFVMFK ISHLGYSWLYGQFNDFTGEFTVDAD
Y T IDDPSHTYPSFEADHMGISVWRGKFEKTSGTVVLDRA


WNI DPQHALAEFKVKHMMIANVRGQFSGVTGSLTLDTD
WEI D GTHSSLE $\quad$ SSVR H L GI A TVVRGRFTEFS GTI TVGED

YT DP FHSKVGWVVNHMGFS TVAGNF DNFSADVESND D
K WF FEPAHCKI GFAVSHFGDTETEGHFRQFDGSVEAQDD


WV L D R V
Y A D P GH T F V V F E V L H F GTSSTARGRFDKKEGTVQQ DRA
K WVV D P M H S EVVQF KV KHLVISTVTGTTKVFDGSLTTEED


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AERSTVHAETKAASVETGDKMRDDHLRSPDFDDVDVHPVI
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## UniRef90＿S2XIM5

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UniRef90－A9WSO3
UniRef90－UPIo00423A7FB UniRef90＿U7KXT2 UniRef90－A1SHU4 UniRef90－ToJS18 UniRef90－UPI0003610F27 UniRef90－UPIO003689ADC UniRef90－UPIOOOO510479 UniRef90－W9GGW8 UniRef90－A3THP1 UniRef90＿Z5XFEO UniRef90－V4HTQ3
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UniRef90＿OOS693

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TNPWGQE｜V VGFTAETK｜I NREDFG｜L｜TWNQA｜L｜ETGG｜VLV｜GKD RSPFGQDIVGFSASTEI DREDFGLTWNVALETGGVLVGRK
 PDPWGGVRAAFHAETTLHRRDFAMNYSALARAGVAVVGTT QDWEGKQRAGFTAETRLSRKEFGLKWNAALLESGGVVVGDQ

 $V$ DPF GNTRAGFEAELTISRKDFGLTVNAALEAGGVLVADK
 NDAYGNN KVAFTATGKI NRKDFGGLNWS SVVEAGMPVVGDE KDPYGNTKRGGSATTKINRKDFGLSWNDVLETGGVAVGEE RDPF GNLRDGFEGGSAI NRKDWGLTWNAALETGGVLVSEK

K S P WG T DS A G F S A E T T K
－1＜｜－－－ （ERAGDGTTTIDRTEWGLVYNQRLEAGGTMVSEK DGGVRAGFHATELRREDFA SYHQLVRLGVAAVGAT


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 K D P GNVVMGF EATTKINRKDFGVDWQAPLNTGGVLVGEE
 T D P WGNKRVGLELSGKINLKDFGLNWNKTLEAGGVLVGET





V V D S F G N S R RV G F E A A T T S S S I EDPF GNTRVGFEASTQQ NRKDFGVDFQAPLNSGGVLVSEK
 GD P Y G Q T K A GF E $\quad$ IE GK I N R K E F G L




 KD P Y G L T R A GF E F S G Di NRKD F GLL G WS QVTEA G GLVV S D K PNPMNKYTVGFDGEAKI K R S DFGMTYALP A M M G D E PDPFGNTKAGFKATGTINRKDWGMTWNNILDFGGLAVGEE


 E N P R L K E V C G G D FE T T L QR S QF GMN Y GLPN


|  | 170 |
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| UniRef90-M1NLB3 | I K I Q I D G S G I K Q |
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| UniRef90_D3P3D6 | I QL LI EI E A VK |
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| UniRef90-D2QGL5 | V K I N C Q l E L L K Q |
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| UniRef90_B7V411 | $V E L$ L S V E G \( |
| ) R Q |  |
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150
160 KDPWGGYRAGFEGTTTLKLKDFDI K MDLGPA SQT TDPFGNERMGFEASTTIDRTDFGIDFQAPLKSGGMLVSNK EDPWGNQRVALSVTGQINRGDFGMTFNQALGSGNMLVADK NDPWGGYRAGFEASGKI KLKDFNDTQ DALGPA SQE QHPMLKEVCGGDFETTIQRSRWGMDYGLKMGM ADD

 $\begin{array}{ll}R D A W G K T R R G T T A T T R U I & N R Q D F G I \\ E D P W & T\end{array}$
 KDPWGGYRAGFTASTRLYMKDFNVK

 KDPWGKMRIGFEATLRIDRQEFGI SYSKTMDNGGLIVGNR
 VDPYGQTKAGFSVDGKVNRKEFGLTWDAVTEAGSVVVSDE HGMEGEVRAACRATAELHRDDFTVSWQTMLARGIAVVGPT
 PDPWGGERAGFEGTTTLLQASDFGIKYMDMVET GDPYGNTKAGFEDEGK SRKDFGLKWNAVTEAGSVVVSDQ A GA Q GGSVA GF EASAEI NRSDFGI T
 KDPWGGYRAGFAGTTEI A DK DFA乌UKYPKDGPAAVGTH $\begin{array}{ll}K D P W G Q Y R D G F E T V F T & Q R S A W G M N F M L N G \\ D D P W G G R R A A F G A T G T \\ \text { D }\end{array}$

 VDPFGATRAGFSATTVI SRKQFGDTWNAALEAGGVLVGDK KDPFGNTRVGFEGAVAINRTDWGLSFNAALETGGVLVSEK




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PHPMKKDACGANATVVVKRTDFNMSKHVP
VGDE
KDAWGNVRAGFAAKGMI NRKDFGLTWNAILESGGVTVGDD
PNRKNIVIAGFSAKGSIKRTDFGMTY GLQGI GDE
DGMEGSKVIGVSATTEINRTDFGDGEGVP ADVVSDK

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 KDFQGNQRLGFSLEGKLNRKDFALTWNKVLEGGGLTVDET TDFYANQKAGFELTGKVSRKEFGLTWSAVTEAGAIVVGDD DNPMGDHTLGFAATGTVTRTDYGM PDYGGTRAAFHAETLLHREDFAMDYNAMVRVGVAVVGTT
 DDPWGNYRAGFEGKTMLTLSDFGIDMSDFPEPMH D LGPK SQE
 $R D L S G N T R D G \square S G A T R I N R K D F G L N W N A A L D T G G V L V G E E$



| UniRef90_T0MC91 | QFI |
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| UniRet90-U3HWY6 | V DLITSVEGV |
| UniRef90-C0XQ14 | $1 \mathrm{~T}^{\text {T }}$ El DGSAI |
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| UniRef90-W0LIPC | VELTISVE |
| UniRef90-UPI0003A807A8 | VKLLIQV |
| UniRef90-C6WIG8 | kva dvo |
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| UniRef90 ${ }^{\text {B3EHY5 }}$ |  |
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| UniRe990-S6AA |  |
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| UniRef90_M1FL21 |  |
| UniRef90_14VS18 | $1{ }^{1} \mathrm{~T} \mid$ R |
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| UniRef90-E90Q14 | KGEFDV |
| UniRee90-A0AO11 PEH6 | T ${ }^{\text {a }}$ |
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| P1000469E88B | VDLY ${ }^{\text {d }}$, |
| UniRef90-UPIO003753FFC | VQVKLDI |
| UniRet90-F8JD33 | VELL ${ }^{\text {N }}$ |
| UniRef90_UPl000373C286 | $\checkmark$ A M Ml L S S |
| UniRet90-Q1K2C2 | V |
| H0P |  |
| UniRet90_D3UXV9 | Velvisvegvrek |
| UniRef90-L8EWQ5 | 1 RIELD |
| UniRef90_D9x351 |  |
| UniRet90-UP10004798978 |  |
| UniRef90_C7PAB4 | KLLMEVQ |
| UniRef90-F4QIL8 UniRef90 E4TWN0 | \% ${ }_{\text {K }}$ |
| UniRef90-E4WN0 | $\mathrm{K}_{1}{ }_{\text {c }}$ |
| UniRef90-W6K6V4 | $\checkmark \mathrm{QL}$ TLYMEG |
| UniRef90-N1NS24 | VELIISVEGVQEK |
| UniRef90-A0A016XLJ6 | VKLLVQV |
| UniRet90_UP100046A341E | V |
| UniRet90-UP10003B7074D | VQI DI AVEAIKQ |
| UniRef90-D7DLX7 | VTI TLPVEAV |
| UniRef90-UP1000363182F | VE E T L Q |
| UniRef90_W4LV14 | 1 H EAEAHKQ |
| UniRet90 UPI00035DFB08 | K ELD EATQES |
| UniRet90 E8YY70 | ${ }_{\text {k }}$ |
| UniRef90- B5EMU5 | I HI KVEVEGVKQs |
| UniRef90-C7R9V8 | VDII |
| UniRef90-DoJ473 | VRLVLQIEA |
| UniRet90-G2HRV5 | VKLDIQLEGI |
| UniRef90-UPIOOO300C8C5 | VKLQAGFEFV |
| UniRef90-UP10003AD14D0 | V S V Q El |
| UniRet90-UPIOOO3758C50 | V |
| UniRet90_UPI00036A4B43 |  |
| UniRef90 H5WJP5 | TKVVI QVEAVKQ |
| UniRet90-A4EV | QL Q |
| UniRef90-UPI0003706456 | $V E I Y M S F E G V R Q$ |
| UniRet90-D8JW 5 | $\checkmark$ |
| UniRet90_D1B3Q6 |  |
| UniRef90-UPI0003041687 | IKLSASVQFTKQA |
| UniRef90_UPI0003B65BB6 | VDLQIS |
| UniRef90 UPI00035C8415 | VK |
| UniRef90-UPI000 | $\checkmark \mathrm{R}$ |
| UniRef90-UPI0003765E1E | LELYVTFEGTRQ |
| UniRef90 S5U4L3 | AELIISV |
| UniRef90_L 7 KXD8 | $\checkmark$ |
| UniRet90_A5WA14 |  |
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| UniRef90 G2HRR7 |  |
| V4 |  |
| niRef90_UPI00040C7729 | IKL ANOLUQEVE |

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 UniRef90-JYYC54
UniRefololupoo36EDD8E UniRef90-UPIO00463BCC0 UniRef90-E6RKQ7 UniRef90-U3C9A7
UniRef90 C1F716 UniRef90-UPIO004265876 UniRef90-D2QDG7 UniRef90-G4CET8 UniRef90-UPIO00310D4CD UniRef90-Q1QXY9 UniRef90-I4NAU1 UniRef90-G8M431 UniRef90-UPI0003AADBOA UniRef90-G8TAGO UniRef90-C5AVJ9
UniRef90 D9SG63 UniRef90 U5E9U3 UniRef90-UPIIOOO3763E7B UniRef90-H8L4D5 UniRef90-UPI000237A4BB UniRef90- N9Cs72 UniRef90-UPIO003B48DF5 UniRef90-D2BFU6 UniRef90-D6A3Q6 UniRef90-DoKZ19 UniRef90- $81 \mathrm{BIM26}$ UniRef90-LoWBP1 UniRef90-W4HP60 UniRef90-UPIO0041EE2A4 UniRet90_GOJTB6 UniRef90-KOHWQ8 UniRefofo-JOBHF3 UniRef90-AONV25
UniRef90 A6EDM8 UniRef90 L1 QSL5 UniRef90-UPIO0040E6FE5 UniRef90-UPI000362EFFO UniRef90 L5N771 UniRef90-W4PZ12 UniRef90-F9RY53 UniRef90-K9E261 UniRef90-F6CRP9 UniRef90-G8PJV2 UniRef90-UP100047E1C0B UniRef90-Q47Y54 UniRef90-C5T4F1
UniRef90-I3TR83 UniRef90 UPIO0039CAB30 UniRef90-F3LTN9 UniRef90 - ZgJJA8 UniRef90-N6VT16 UniRef90-UPIO00346EB73 UniRef90-A0A010NPD8 UniRef90-F5SVR8 UniRef90-D9X1A0 UniRef90-D2UB13 UniRef90-A3SHM2 UniRef90-UP10002DFEDF3 UniRef90_K6YSI4 UniRef90-G6XL96 UniRef90-A0A023Y8B3 UniRet90_W1S2K1 UniRef90_L8EGL8
UniRef90 UPIOOO4 UniRef90-C6WUP3 UniRef90_UPI00046649E3 UniRef90-G8TBG2 UniRef90_UPIo0034865D6 UniRef90-H1H1H0 UniRef90-FOQA30 UniRef90-B9LYZ5 UniRef90-UP100035CE97C UniRet90 W7SSJ7 UniRef90-F7VCS9 UniRef90-R9NSE6 UniRef90-C9P6Q7 UniRef90-UP10002E00B6C UniRef90-UP100037C0C05 UniRef90-R4LHC6 UniRef90-Q12MB6 UniRef90-UP1000349FB66 UniRef90-K6ZXT7 UniRef90-Q1LJ50

EYVVVDTEHAFI QFKIINHLIGYSY\| ${ }^{20}$ GGNEEEFEGRFYYDDD YVI DTAHAFI QFKISHLGYSWLYGRFNDFSGDFSYDSN WQ DPVHSEVGYSLKHLGRARSRGRFLAFSGQVVTGES YVIDTAHAFVNFKDKHLGYSWLHGRFNTFDGKFNYDKN YVI DTAHASUNFVVSLGYSFTKGRFNTFSGDFTFDKN YN DPMHSEADFS LHMDLSHVHGQFSHDTGTVVLDKD WAVDKSHSRVGFTLTHNLLSDVDGNFKSFDAKISSAKD YYVSDAVHSEVEFQVKHMMVSKVKGSFEEFNFEVETDNT Y YQDSQHAFDQFKISHLGYSYVLGTFDDFTGTFNYDPD YQLDPNHTYPSFEADHFGTSTWRGKFNKSSGSVVLDRA YQLDPNHTYPSFAADHFGLSVWRGKFTKTTGTVTLDRQ RYRLDPAH GF
YVIDSSHSMPRFEYSHFGYSLQLSRFDTYTGKI TIDRA WVIDPSHSTLQFSVRHLMVSKVRGRFTDFSGALVIHPD R AQI DPTHTATVFTWSHFGFSTPSANFSDIQGVINVDNA NYALDPVHTRVAFQVSHAGFSNPVGSFSGSHGHLAFDED WEIDDAHSSVTCTAQHI GVARVHGRFNSFAGTARITDD RYQI DPDHSQVFFTLGHVGLAPFTGRFNKISGQYTI DSK RYALDPAHGKITWSLNHLGYSTYYGQDTDVAGELDLDPA YTVDPVHSSLGFSIRHF VSKVPGTFTKFSGTVTVDD
Y Y SLDSSHSQ1
Y VIDTAHA
VYADPDHSLIWFT GHAGVAVVVGRFDKLSGSYTFNPA NYA DPTHTFASFEISHFGAAVNRGRFDKKEGTVQFDKA YQVEPSHTFVHFSYKHLGLSTQNQRFDKAQGTVTLDQQ KWTVDPMHSFVNFSVKHMGDSFVDGAFTKFDGAVEASKD YRLDPAHGKITWSVDHDGFSTYVGQFVNVQAELRQDPN YQI DPAHTFPSFSYSHDGLSTQQLRDDNTSGTVVYDKE
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FKLDKVHSGGGFSVKKMMVSKAKGEFKDFDVQDEGDDN YVI DTAHASINFKVSHLGGSFIDGRFNTFDGDFSYDQD YKVDTAHSAVDFKDGHDGVSTTVGRFDEFSGDFSFADD YKFDPTHTEVRFYYNHAGLSEQSGEWKVVSGDVEFDPE YDVDSSHSNVEFKVKHLMISNVSGKFNNFNGKFEYDEK YKVDVAHAFVQFKIKHLGYSWLLGRFNTFDGDFSYDDKE YTLDPEHAVVGFLVMHAGYANVLGRFREVEGEISFDEA YRLDPDHASLVFSLDHLGFSNYVGRFNLLDASLDFDPA VTYKVDATHAAAFYELGHFATSTNRGRFPVKEGSVTIDRA
YKLDPSHTDVLLQWNHEGFSNPSAHFGNAEGULVYDTD

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YKIEPTHTYATFEIMHFATSTNRGRFDKKEGTVVLDKA WNL SSSHSEDGMTVRHAGISTKVRGRDKKEGTVVLDKA YKLDPA TR R GFTARAALGSKVHGLIFEEFEGSARLDGS YKLDPAHTDVLVQWSHFGFSNPSANFGDVEGTLVYNQD YKVDVAHASVQFKIVHLGGYSWLLGRFNTFDGGFSYDKS YVIDGAHASINFKIKHLGYSWLTGRFDTFGGKFSYDQD YDVEPGHTQVGFSVLHFGFTNYQGTFSDVSGTGEDDKN YKI DPGHTQVVFAYDHMGFTNNMGVIAEPTGTLTLDKN WDIDTCHSSVAFTARHDGLAHVHGRFNSFMGAI WMGEQ VEYKKIDAAHSFANWSVRHVMVAKASGTFNETDGGI QFDAD WKVDPYHSKVSFSVSHLVISEVDGSFNSFDGSFISNDD WSVDKAHSRVGFNFTHLQUAQLGGTFNSDDGKLTAKPD WYLDP LHSSLDFVAHYLRFGRVQGTFGQAHGLVNVTDN KWNVDNYHSFLNFSVKHLGDSFVDGRFDKYEGTFETPED YTVEPTHTFATFEISHFGASVNRGRFDKKEGTIELDKA
 WDVDPVHSDVSFTVPHMMVSKVHGRFGRFTGRIVTGED WNIDPVHSEVAF VVRHLGVSKVRGRFNTDSGTIVTGED YKVEPGHTQVVFSLLHFGFTNYSGLESGASGTLALDVH YKI DKQHAFVQFRIQHLGYSWLYGTFKDFDGKFTYDED YVIDTAHASIVFKVNHLGFSYVKGRFNTFNGEFSYDPE YKI DTAHASINFAVSHLGYSDTQGRFNNFEGTFSYDEN YSI DPTHTAPRFEYTHMGYSTQVHRFDNTSGKVVIDRE Y LDEAHKR GFQAQHMMVSAVRGEFSGGTASIVVGDD
 WYLDPLHSSLIFVAHYLRFGRVQGTFGQAEGRFDIGEA EYKLDKDHAVLLFKINHMGFSSYVGRLNAFDVSLNFDPN
 UniRef90- J1YC54 UniRef90_UPI00036EDD8E UniRef90_UPI000463BCC0 UniRef90_E6RKQ7 UniRef90_U3C9A7
UniRef90_C1F716 UniRef90 UPI0004265876 UniRef90_D2QDG7 UniRef90_G4CET8 UniRef90_UPIO00310D4CD UniRef90_Q1QXY9 UniRef90_I4NAU1
UniRef90_G8M431 UniRef90_UPI0003AADB0A UniRef90_G8TAG0 UniRef90_C5AVJ9 UniRef90-U5E9U8 UniRef90_UPI0003763E7B UniRef90_H8L4D5 UniRef90_UPI000237A4BB UniRef90 N9CS72 UniRef90_UPI0003B48DF5 UniRef90_D2BFU6 UniRef90_D6A3Q6 UniRef90_D0KZI9 UniRef90-B8IM26 UniRef90_B1ZYT0 UniRef90_W4HP60 UniRef90_UPI00041EE2A4 UniRef90_G0JTB6 UniRef90_K0HWQ8 UniRef90-J0BHF3 UniRef90-A0NV25
UniRef90-A6EDM8 UniRef90_L1QSL5 UniRef90_UPI00040E6FE5 UniRef90_UPI000362EFFO UniRef90 L5N771 UniRef90_W4PZ12 UniRef90_F9RY53 UniRef90_K9E261 UniRef90_F6CRP9
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UniRef90_UPIO0047C119A UniRef90_C6WUP3 UniRef90_UPI00046649E3 UniRef90_G8TBG2 UniRef90_UPI00034865D6 UniRef90_H1H1H0 UniRef90_F0QA30 UniRef90_B9LYZ5 UniRef90_UPI00035CE97C UniRef90_W7SSJ7 UniRef90-F7VCS9 UniRef90-R9NSE6 UniRef90_C9P6Q7 UniRef90_UPI0002E00B6C UniRef90_UPI00037C0C05 UniRef90_R4LHC6 UniRef90_Q12MB6 UniRef90_UPI000349FB66 UniRef90_UPI000345BC4B UniRef90_K6ZXT7 UniRef90_Q1LJ50 UniRef90_Q39JG1 UniRef90_UPIO00374A11D UniRef90_UPI000368A99E

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LE A S SVVEMEVVVVNSLINSNHAERDRHFLSDDF LSAGDYPTA N A A S K I N V T I D T T S I D S N H T E R D Q H L R S A D F L N N V E K F P Q S


 FNNAKVSVVIDVKSIVDTNQSQRDEHLQS GDFFEAAA YPN I


P
A







P
P A K N KA E I SI SV
NEHSSVVEATVIVVGSVNTANEKRDNHLKSPDFFDVANHGTA
P E K S S V EVTIDPVK SLDTHVA L LD E HL L S
PANSSVVEVVFPVRSMMTGWEGRFEHFMSEDFFGAEE GDMV
A


LT DAKINFTVDVNSIDTRVEPRNNHLKSDDFENAAQFPTA
P S A S T L T A T I P L T D V A S N S D G L N K H L L T T A D F F D TA A T H P VA



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TKTGSVDVSIDVKSVNTGHAERDKHIRS

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PAATKVTAVIETGTI
PTRSSVSIAAN NASSVDSNHAERDKHLRS
 AKTGSVVDVKUDASS:
 PAASKLTHSLPVSSVQTTSDRGTDELKGADWLDAAKYPTA NAASKVTVNVDTRSLDSNHAERDRHIRSADFINASQFSTA PEATTVSVKIDATSVNSNHAERDKHI RSKDF A AVDQYPEA
$V T$ GMGSINALNETLNRHLQGPDFFDTQKFP T


UniRef90_UPIO00287BC4D
UniRef90 J1YC54
UniRef90-UPIO0036EDD8E UniRef90-UPIO00463BCC0 UniRef90_E6RKQ7 UniRef90-U3C9A7
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UniRef90- $81 \mathrm{BIM26}$
UniRef90_B1ZYT0
UniRef90 LOWBP1
UniRef90-W4HP60
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UniRef90 A6EDM8 UniRef90-L1QSL5 UniRef90-UPIO0040E6FE5 UniRef90-UPI000362EFFO UniRef90-L5N771 UniRef90-W4PZ12 UniRef90-F9RY53 UniRet90_K9E261 UniRet90_F6CRP9

## UniRef90-G8PJV2

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UniRef90-Q12MB6



130
140
F G|I D M S D F ${ }^{15}$
150
160


 K D P WG GYRVGFE GETSSLKLA D YGI D Y N L L GPA $N D P W G G E R A G F S G Q T R I D E L A D F E I$ $\square$ NMHGQMHRGFQATTSSDRKDFGLKWNGLLPNGDAMMISSY $D N G H G Q L K H G F E V T G Q V N R K E F G M T W N K L T D T G G L G G L G E D$

 DD P WG E Y R H GF E GT T T L T L A D F GGLDTS K L G P TA S S


 PGMADAPVAGFTATTTI NRRDF GDTTEMPMAEGGVVVGDK NDPWGGYRRGFEARTTLHLS DYNMLKS SMLGA MV A N
 EHPMTKQS IGFNAT TSFDRSAFGVGAYVPN RHPLT LRRRVGFSATATDHRKDFGMMD DAWNVVGDE


## H

## P

E GARGA QLLS GWEATTTIKK S DF GlV S GPAML
K HP MWAPAVGFEAETTLKRSDFGMDAYVP
S Q

## 

## K



 K S PMGSTIIAGFDVT GKVNRESYGLTYNAADETGGMLLGRD


M H P MKKEACGADVVGT

P

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\square
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N QNLLGKYTLGFSAEGTIVRSSDFGMSYGVP

## N

 ADP WGGYRA AFVGETEFTDSDYGGNVDMLGPSSQV PHPMHKQALGFDATTTVKRSDFGLSAYVPN GARGMVGRK

## S

## 




 ND GNGN T K A GF K I T GII I N R T D F GVVA WNAKTEHGGMVVGED


## Q




## K

 A D P WG GERLGLKGT T RLELDND GIIK PNGMKKDEIGANAVAKIKRSEFNMGKYVP RDPYGKD D F GFSATGEVDREAF GLVWNVALEAGGWLVGK K
 QHPMLKREAGADAVA Q $\square$ NRADFGIIDYGDKYGFK
PHPMLKEVCGVDAVGEFDRSDFGLDYGKQYGFKMKT

| UniRef90_UPI000287BC4D | $\|\mathrm{L}\| \mathrm{E}\|\mathrm{~L}\| \mathrm{Y} \mid \mathrm{V} \operatorname{T} \text { F E G\|V\|R } \mathrm{Q}$ |
| :---: | :---: |
| UniRef90-J1YC54 | $V \mathrm{Y}$ L E L S VE GI R K |
| UniRef90-UPI00036EDD8E | V K I T L E I E A A L Q A |
| UniRef90_UPI000463BCC0 | V K L D L D I E L V |
| UniRef90-E6RKQ7 | V DI G L F I E G I R Q |
| UniRef90-U3C9A7 | V D MELYVEGI K K |
| UniRef90_C1F716 | V K I T L D V E A A A K |
| UniRef90_UPI0004265876 | I K L I A N I Q |
| UniRef90_D2QDG7 | I E L KVNGEFTKQDAA |
| UniRef90_G4CET8 | V R L D I Q I E A VK Q |
| UniRef90_UPI000310D4CD | $V \mathrm{~K} V \mathrm{Q}$ L E L Q F S E K Q |
| UniRef90-Q1QXY9 | V E MY L V V E G I R Q |
| UniRef90-I4NAU1 | LT L D I T F E G V Q K |
| UniRef90-G8M431 | L HI Q A E GVK Q |
| UniRef90-UPI0003AADB0A | TKLQ |
| UniRef90- G8TAG0 | VKLTA D I E M F R K |
| UniRef90_C5AVJ9 | $V \mathrm{~S}$ L R L E G E F K L Q |
| UniRef90_D9SG63 | V T L L T I P V Ve S VK |
| UniRef90_U5E9U8 | I A L S L DVE |
| UniRef90_UPI0003763E7B | $V E \mathrm{~L}$ Y M S I E G VR |
| UniRef90-H8L4D5 | V T L H I T TEA EA A |
| UniRef90_UPI000237A4BB | V K I Q L DVQ F VEP |
| UniRef90_N9CS72 | I TVVNIT TEASVP QPKA |
| UniRef90_UPI0003B48DF5 | I RLII EAEAI R |
| UniRef90-D2BFU6 | V D I EII L L E A P P |
| UniRef90-D6A3Q6 | V Q V I DVQLV S K S |
| UniRef90-DOKZI9 | V H I T V N I E Gl R A K P |
| UniRef90-B8IM26 | V F L R L E GEFKA A P |
| UniRef90 ${ }^{\text {B1ZYT0 }}$ | V TVVKI NIE A GK |
| UniRef90-LOWBP1 | L DVV T I T V E A DE A D A Y A |
| UniRef90-W4HP60 | V E I E I S V E A M E G Q P |
| UniRef90_UPI00041EE2A4 | V D MEL HVE G I R Q |
| UniRef90_G0JTB6 | V H L HVNI E G V R T A |
| UniRef90_K0HWQ8 | V R L V V Q I E A V K Q |
| UniRef90_J0BHF3 | V T I R I A L E A I A P |
| UniRef90_A0NV25 | V E FVI E TEF |
| UniRef90_A6EDM8 | $\checkmark \mathrm{T}$ I S L N L E F A Q A |
| UniRef90_L1QSL5 | V K L HIE GEFVLA A |
| UniRef90_UPI00040E6FE5 | $V \mathrm{~K}$ L A S L L F K Q |
| UniRef90_UPI000362EFF0 | V T I T V S L E A V A E |
| UniRef90-L5N771 | $V \mathrm{KFEGNFEFV}$ |
| UniRef90-W4PZ12 | V K L A N F E F V |
| UniRef90-F9RY53 | V D M ELHVEGI K Q |
| UniRef90-K9E261 | V K L A I Q V E A V K |
| UniRef90-F6CRP9 | TEI EVVYVE G I R Q |
| UniRef90_G8PJV2 | VRLEI S AE |
| UniRef90_UPI00047E1C0B | $V \mathrm{~K}$ I D V E I Q G |
| UniRef90_Q47Y54 | V E M A L H E G V R |
| UniRef90_C5T4F1 | V R L V I Q V E A V K Q |
| UniRef90-I3TR83 | I S L I L E MEARRQ |
| UniRef90_UPI00039CAB30 |  |
| UniRef90-F3LTN9 | V EMQI Q V E A VRQ |
| UniRef90-Z9JJA8 | I K V R I T AEA QLE G A V ${ }^{\text {a }}$ |
| UniRef90-N6VT16 | L EMI I S IE G VRQ |
| UniRef90-UPI000346EB73 | V R V V I Q V E GVK Q |
| UniRef90-A0A010NPD8 | $V \mathrm{~S}$ I D L E A A FV L A Q |
| UniRef90-F5SVR8 | $\checkmark \mathrm{Y}$ L T L S I E Gl K Q |
| UniRef90_D9X1A0 | $V \mathrm{~T}$ L E F DVT A I R Q |
| UniRef90-D2UB13 | V K I R I T TEEALLQ |
| UniRef90-A3SHM2 | L NVMIS I E A Q K E |
| UniRef90_UPI0002DFEDF3 | $V$ Q M T L N I E GVR Q |
| UniRef90_K6YSI4 | V E L E L H I E G I K |
| UniRef90_G6XL96 | V Q L R I A G A E E Q |
| UniRef90-A0A023Y8B3 | V Ni RI T T E A T G E K P A A |
| UniRef90-W1S2K1 | I ELKI DA G F E K Q |
| UniRef90_L8EGL8 | I M I DL El Q A V L K S |
| UniRef90_UPI00047C119A | V K I KV DI E A AKK |
| UniRef90-C6WUP3 | I EI ILLI E AVK P A A |
| UniRef90-UPI00046649E3 | I E I TVVKLE LVKK |
| UniRef90-G8TBG2 | $V \mathrm{NLDAAT}$ T F S K |
| UniRef90_UPI00034865D6 | V D V L E VRLQ S Q P A |
| UniRef90-H1H1H0 | $V \mathrm{~K}$ I NVNLEFNK |
| UniRef90-F0QA30 | V R I VA Q V E A VK Q |
| UniRef90_B9LYZ5 |  |
| UniRef90-N6XHV7 | VKLN F E I E A L R |
| UniRef90_UPI00035CE97C | V Q I T L E I E AVRQA |
| UniRef90-W7SSJ7 | I K I E L DVE A Q L Q A |
| UniRef90-F7VCS9 | V TLA A GAFEKQ |
| UniRef90-R9NSE6 | AELI I SVEEGIR Q |
| UniRef90-C9P6Q7 | V D MEL HVEGI K K |
| UniRef90-R9PQS7 | V A M D L VI E GI K K |
| UniRef90-UPI0002E00B6C | M T L Y V E G I K Q |
| UniRef90_UPI00037C0C05 | $\mathrm{V} T \mathrm{~L}$ S I S V E Al K |
| UniRef90-R4LHC6 | V R L El A GEAl H Q P A A |
| UniRef90_Q12MB6 | V K L D L V V E G I K Q |
| UniRef90_UPI000349FB66 | $V \mathrm{D}$ V L EV R L Q N Q D P A |
| UniRef90_UPI000345BC4B | $V \mathrm{D}$ V L E V R V Q N Q D P A |
| UniRef90_K6ZXT7 | V EI EI HS E F Q R Q |
| UniRef90_Q1LJ50 | V K L A I Q V E A V K A |
| UniRef90_Q39JG1 | KL LI TAEALKQQ |
| UniRef90_UPI000374A11D | VTI T L S LEAI K |
| UniRef90 UPI000368A99E | $\mathrm{V}\|\mathrm{S}\| \mathrm{L}\|\mathrm{L}\| \mathrm{E}$ G E F $\overline{\mathrm{K}} \mathrm{A} Q$ |

## UniRef90_UPI0002627532

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UniRef90_R0E495
UniRef90_B8CS85
UniRef90_UPI00037D1CC0 UniRef90-I0L8J8
UniRef90_UPI00041CCAEC UniRef90_V8GBH1
UniRef90-B9E910
UniRef90_UPI00046335E8 UniRef90_UPI00046F2C27 UniRef90_UPI000369543E UniRef90 B1 XXW3
UniRef90_UPI0003786193 UniRef90_D8IZ82
UniRef90_UPI00039A7B62
UniRef90 S9RV04
UniRef90_UPI000470DD29 UniRef90_E1X1Z9
UniRef90_UPI00035EB432 UniRef90_H5XBY6 UniRef90_V4PRS8 UniRef90_UPI0003B5F8C9 UniRef90 I1XJD6 UniRef90_W6WK83 UniRef90_A6FNZ1 UniRef90_A0A021W7U2 UniRef90_UPI000368EB1C UniRef90_UPI00035D373A UniRef90 F2EU98 UniRef90_UPI000329A46D UniRef90_A6TAJ5
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UniRef90_D7A7C9 UniRef90_UPI00047D2E8E UniRef90_UPI000406BB06 UniRef90_J2T357 UniRef90_G0ESY6 UniRef90_UPI000237A384 UniRef90_J9ZBV8 UniRef90_K6CSQ7 UniRef90_C7PRZ9 UniRef90_UPIO0036C05DC UniRef90_E5XTK0 UniRef90_UPIO0026C9BA2 UniRef90_F3S8E3 UniRef90_UPI000363C15F UniRef90_V4RPW6 UniRef90_D1BZR1 UniRef90_UPIO00349E512 UniRef90_G4CJZ2 UniRef90_Q0C5X2 UniRef90_V9VVH4
UniRef90-I2GK77 UniRef90_UPI00041A6097 UniRef90_E4RRW3 UniRef90_UPI0003B41A64 UniRef90_U2HCG5 UniRef90-I2BN18 UniRef90_UPI00034ABFCA UniRef90_UPI00034A3C09 UniRef90_UPI0004171F01 UniRef90_V1SR37 UniRef90_B6B1F3 UniRef90_T0AUD0 UniRef90_U1TBM7 UniRef90_-14WT87 UniRef90_W0Q601 UniRef90_UPI00047DC87F
UniRef90_I2JEU8

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WT I S 10

## 20

VS VR -30
30
40
VHSVVFVVRHLGVSKVRGRFAEVEGEVVTGAD
 Y Q DD TAHASVNFKISSHLGYSFTKGRFNNFSGNFSYDPN WYLDPLHS SLIFVARYLSFGRVQGTFGQARGLVQVTED
 YTLDDASHASLLTFTVVHLGFSTYTAGFDRFDATLEIDPA Y V L D K T H A S L T A K L K H M G L S N Y T L R F T K L D A D YT Y D P A YVI D T A H A SI EFRVVHLGYSFVAGRFNTEAGDFSFDET

 E Y EFDPAHTNVFFTDDHFGTSTNHGAFHGQEGVVVVDRA N F K LDD P V H S NVEEFS I K H L M V S K V K G E F T E F D G QAT G D RYELDPVHTRVLFAVSHAGYSQALGTVSGSQGTLEFDPD

 YKI DPDHTSVIAS WSHFGFSNPTATFDDASGMIMFDDN Y SI DPSHTYPSFEADHMGVSDWRGKFDKTSGTVTLDRA RYTLD PVVTRVLFAVEHAGFSKALGTVVGSTGTVVFDPD YVLDSSHSQIVFSYNHLGFSTGYGMFSGFEGEI AWNED V WRVV EWTLDDSSHSQIVFSYNHLGFSTVTGMMFSGFTGGDDSF DPN WVI D P A H S VMGFAVR HL M S KVRGTFSDF SGE I R IVE E D
 YVI TAHAF DDFR QHLGFSWMSGRFNDFEGGTSYDPN $Y$ QL D P THTYPSFEADHMGVSTWRGKFTKSSGTVTLDRA YELDASHSQ
WY L D P L H S
$R$ WVID P D HF AVGGF VVDHAGYAKVLGMFLEAE GEFVVFDP D MHYQLDPQHTSVVVSWEHFGFSHPTADVPDTTGSLVFDSK Y Y E D P TH T A V AVV SWNHFGFSNPMAF PNATGEVKFDSN
 K Y MLDAS HS Q IVFTYSHVGFSTTYGMFSGFEGEDMFDQD R Y T L D P H H WSVVGF DVSHLGYSRFTMRF DRASAVVLDWRGG Y KVE P Y H T QVGF TL SHLGFSNFS GFFTGVSGSLIDDP T YRID DSHSFANWSI RHVA SKTSGTESDIKGNILIDR D RYEI D P D HFTVAF LVVDHIGYAKVLGS FRAAR GSYRFDEA
YKIDPTHTATVFSWNHFGFSTPSANFSD DQGVIKVDNA Y AV E P Y H T Q I SF S L L HMGFS DF S GFFS QAS GTLTLDPA
 RYDID QDHTSITFDIDDHFKYRFTMRFNRKQGELDWNDG TLDNQHTYVLWKI KHLGFSTQAGKW YAS GQLVLD K D
 EYTLDPHHTHAHFFIDDHGASTNMGSFNRLSGDLQFDPV
 LE Y T ID PAHT TVVYF SASHFERS SVVGRF GK $\square D G R L V Y$ VA D Y E L D P GH S QV LIF S Y D H DGF S ETF GMF S GFS GE I EF N D D
 KWSVDKAHARLGYTI SHMTLSESEGNFKSYTADI TASKD
 WT I D P V H S E V T A S IV H L G V Y AVVEHHTQVTHSVSHFGISPYAGTFSDASGTLKLDPA Y RVVEPAHTQIAFSLLHMGFTNYTGLFSGDVGTLRLDPA
 YHLDTEHMRLGFQATHMMVSAVRGEFTEGSANVWVAE

 YR DPHHTNARFA DDHFGTSTNVGGFYGLTGEMKFDPA $K Y$ V L D A A H S Q L L F DY N HLLGYS T T Y GMFA GFE GEEIMM D Q D WMVDKSHAKVGFTVTHLMLSEVDGNFKTYDAKITAKPD YELDDPNHTAVRFSVDHFGTSTNAGGFYDLSGDLEYAPE
 E Y KLD P A H T Y V DF KVVDHVGYNQADGRFNEVDGSFVFDEE DPAHTNARFEVKHLGIADVDGAFTKLEGTVETANN YVID K E H A F VDFKIS HL GYSYI T GTEKDLDGKFSFDAA $W Y V D P A H S C D D F V A R Y L G F G R V Q G T F G D A W G T V D V A E D$ NLDPTHTYPSFETDHFGVSVWRGKFTKSSGTVVLDRA

 E Y T L D P TH T Q VVRF S WD HFGFS TP GAS F DEVT GTVVVVNEA Y QI DAEHFGI SFS IDRHLGFADTGGLF LKARGSFVYDEK
 YKI DPYHANARFS IDHFGTS SNVGGFYNLTGELQLDVE


## UniRef90 UPIO002627532

 UniRef90-UPIO0035F44FC UniRef90-V4Q0Z88 UniRef90-UPI00034B2265 UniRef90-D9XOVO UniRef90-E8RP84 UniRef90-ROE495 UniRef90-B8CS85 UniRef90-UP100037D1CC0 UniRef90-10L8J8 UniRef90-UPI00041CCAEC UniRef90_V8GBH11UniRef90
U9E910 UniRef90-UPIO0046335E8 UniRef90-UPI00046F2C27 UniRef90-UPIOOO369543E UniRef90-UPIoo03e
UniRef90 $\mathrm{B1XXW}$ UniRef90-UPIOO03786193 UniRef90-D81Z82
UniRef90-UPI00039A7B62 UniRef90-S9RV04 UniRef90-UPIO00470DD29 UniRef90-E1X1Z9

LA D S KVVTAT ${ }^{50}$
LADSKVTIKAGSIDTKNADRDAHVKGADFLDVEQFPT PENSSLEMTI DTNSLDTFWAERDTHFKSADFFDTAKFPEA

 PEAAKLHATVDVKSLDDPTPPKGFHLMSAQWFDAAAHPQM KADSKVNVTINTASVDSNHAERDKHLRSPDFLNTAKFPEA
P

## A

## W

 NIDASTVEVSVVPLQRVDLGDERWNRATLIARNLLDAERWPEA VADSSANLTVDVSSLNTNHAERDKHILSGDFLDASQYPEA AKTGKVDITIDVASINTGTGPFNSHIKSAEILDAEKFPTA VSASSVNVTHPVETVDSYVKKLTNEFMNEEYFNVDEYPEA WAASRLDVTVPLQRVDLGDPKWNQATLARNLLDAERFPEA TAKSKVDITHPVGTVQTGSDKLTEELKGTDWFNTQAHPNA

P

I


$P$ E K S T

## 

P

A

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## 

| $H$ |  |
| :--- | :--- |
| $N$ | L |

P

## \section*{}

## \section*{}





 | $P$ | $A$ | $A$ | $S$ | $S$ | $V$ | $S$ | $V$ | $T$ | $L$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $L$ | $S$ | $M$ |  |  |  |  |  |  |  |
| $A$ | $D$ | $A$ | $V$ | $V$ | $E$ | $L$ | $T$ | $V$ | $D$ | $A$ |
| $N$ | $S$ |  |  |  |  |  |  |  |  |  |
| $A$ | $K$ | $G$ | $F$ | $V$ | $G$ | $T$ | $I$ | $P$ | $M$ | $G$ |


P S IVS D L K V S I Q A D S V D T N H D E R D F H L R R
F D K A K V

P LA S K V

F S D A V


$P$ Q N S K V E A T I D V S S I V T G LIP E L D K H L K S P L F F D T E K Y P T A


UniRef90_I2JEU8


UniRef90_UPIOOO2627532 UniRef90_UPIO0035F44FO UniRef90-V4Q0Z8 UniRef90-Езвкв8 UniRef90-UPI00034B2265 UniRef90-D9X0VO
UniRef90 E8RP84
UniRef90-ROE495
UniRef90-B8CS85
UniRef90-UP100037D1CC0 UniRef90-10L8J8
UniRet90_UPIO0041CCAEC UniRef90-V8GBH1
UniRef90-B9E910
UniRef90_UPIO0046335E8 UniRef90-UPIO0046F2C27 UniRef90-UPIOOO369543E UniRef90-UPIoo03e
UniRef90 $\mathrm{B1XXW}$ UniRef90_UPIO003786193 UniRef90-D81Z82
UniRef90-UPI00039A7B62
UniRef90 S9RV04
UniRef90-UPIOO0470DD29 UniRef90-E1X1Z9
UniRef90_UPIO0035EB432 UniRef90-H5XBY6 UniRef90-V4PRS8 UniRet90_UPIOO03B5F8C9 UniRef90-I1XJD6 UniRef90-W6WK83 UniRef90-A6FNZ1 UniRef90-A0AO21W7U2 UniRef90_UPIOOO368EB1C UniRef90-UPI00035D373A UniRef90 F2EU98 UniRef90-UPIOOO329A46D UniRet90-AGTAJJ
UniRef90-EOMR32 UniRef90-B6AW73 UniRef90-C5AKQ3 UniRef90-W5YBY1 UniRef90_UPI000379901B UniRef90-A0A0241JW4 UniRef90-L9PHZ2 UniRe90-AOAO23RZ59 UniRef90_UPIO0046FAD81
UniRef90 M4S979 UniRef90 M4S9299 UniRef90 C3KKZO UniRef90-G8UV33 UniRef90-W7DQ12
UniRef90_D7A7C9 UniRef90_UPI00047D2E8E UniRef90-UPIO00406BB06 UniRef90_J2T357 UniRet90_GOESY6 UniRef90_UPIO00237A384 UniRef90-J9ZBV8 UniRet90-K6CSO7
UniRef90-UPRO0036C05DC UniRef90-E5XTK0 UniRef90-UPI00026C9BA2 UniRef90-F3S8E3 UniRef90-UPIO00363C15F UniRef90_V4RPW6 UniRef90_D1BZR1 UniRef90_13ZFD4 UniRef90 UPIOOO349E512 UniRef90_G4CJZ2 UniRef90_OOC5X2 UniRef90-V9VVH4 UniRef90-12GK77 UniRef90_UPIO0041A6097 UniRe990_E4RRW3 UniRef90-UPIO003B41A64 Uniego U2HCG5 UniRef90-I2BN18 UniRef90-UP100034ABFCA UniRet90_UPIO0034A3C09 UniRet90_UPIO004171F01 UniRet90-V1SR37 UniRef90 B6B1F3 UniRef90-TOAUDO UniRef90_U1TBM7
UniRef90 14 WT87 UniRef90-W0Q601 UniRef90-UPIO0047DC87F UniRef90_I2JEU8

## 



DGMEGTKVFGDSATTEIIKRSDFGIVGASПP 150

AAVVIS ${ }^{1}$ EHPMEKKWVGFAGTTTIKRSDFGM DMYTPYVGDG AGMAGNARDGFSATGSLKRSDFGMAYGDPAPGTTMGVSDA KDPWGGERAGFYGTTRLELADFGII PDPEGDYGHFFSANTQISLSDFGVGDGGPपPWGGRLVGDT
 FAPYDNARDGFSVKGEVKRSDFGMAFGDPEPGSNMGVGDT
$P G M N P Q R A G F S A V T Y U K R S D F G V S K Y V P L$
$V G D D$

## ,

$R$
$E$
$E$
$K$



 ENPLNKYTAGFDATTTIKRSEFGLKQYVP ARAVSDE

 F N P L E A R Q A GF G A D M T I N R T E F GVVG $\quad$ RLD G NLI G D T DDPWGGYRVGFQGETSFIIEDYDUDVSKLGPS SMKTVSQ
QHPVLKEVCGVEATGEFSRADYGMDFGTKYGFSMKTV
$G H P M G Q P W A G F D A T T T L L R S D F G V G Q F A P Y$
$P$
PHYLGGYGHFFSGSTVLVLSDFGISDGGELPWGGRLIGDE PHPMLKEVCGADASASFQRDQFGI AAGK DWGFNM



P

## 

TAP WG GM R V GF E A T G T I V R S E F G V K Q Y


 $V N P \square D K E T V G F E G N A V D M R S A F G V S R Y V P L \quad V G D S$
$\vee$
PDPLKKDTLGFSADGHFSRAKFGLTTWYP $\square$ NLLNDETAGFSATTSLKRSDYGIK

TALGMIGDD

I NPMTKENIGGVATTTIKRSEFGLGYAVPD




K N P M D G S TVGF DVEGKINRENYGLLTWNAALETGGF LVGKD
ENAQSKKVAGFTITGTFKRKDFG FATEAPATMLGED


## 

P
YPNARAGF

 $E G R Q G K K I V G \square K A T G T V N R V E F G V G K \quad S G A A V D D E$

 T N P MLK EVVCGA DATA QFDRADF GVVNYGQAYGFKMAT ENPMSKKTSGFQVTGTDKRTDFDIDAAKTPTAVLGNE DDPWGGKRAGFEAEGKL
D HPMANQWAGFDATTTLLRSDFDMG $\qquad$ LF A P F VGDE A V S D E
D Y P M GK H T L GVVSASTTI KRS QWGMSY A

P H P MLKEVVGADALATFQRDAFGMDAGKPYG VGDN
QSPMLKEVCGGDFVTTDDRSQWGMNY
P GMDHK P H A G Y T A T $\square T$ L N R K D F G $\square$ G A K Y P
$L \vee D V G M T K D$


UniRef90 UPI0002627532 UniRef90_UPI00035F44FC
UniRef90_V4Q0Z8
UniRef90_E3BKB8
UniRef90_UPI00034B2265
UniRef90_D9X0V0
UniRef90-E8RP84
UniRef90 ${ }^{-}$R0E495
UniRef90-B8CS85
UniRef90_UPIO0037D1CC0
UniRef90- UPIO0041CCAEC
UniRef90_V8GBH1
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UniRef90_UPI00046335E8
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UniRef90_TOAUD0
UniRef90_U1TBM7
UniRef90_14WT87
UniRef90 W0Q601
UniRef90_UPI00047DC87F
$V|K| I|L| N D A G L Q A$

$V$ T V L HAEASKA Q | $V$ | $T$ | $V$ | H A E A S K A Q |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $D$ | $F$ | $R$ | $I$ | $E$ | $T$ | $E$ |

 I D LVI E V R L Q D A D P T $V K \cup Q L D M Q F V E P$ $V G V V$ D A E F V T L N I E V E F Q K K V S L N L VV E G I K K
 I H I Hi T T E A MV P K A

AKFEVNAEF
V E LRI E A E A VRA

| $V$ | $D$ | $M$ | $L$ | $H$ | $V$ | $E$ | $G$ | $R$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $E$ | $L$ | $Y$ | $V$ | $V$ | $F$ | $E$ | $G$ | $R$ |


I R L VI Q TEAVK Q
$\mathrm{V} \mathrm{T} L \mathrm{R} \mathrm{I}$ T TEAQAK
TKL A A Q VEA AVK
VEL R I E AEAVREAPA
V E V E I S VEAMPA
V K L T I E GAFEK
V D I Q V T I E A VR P A

| $V$ | $D$ | $K$ | $S$ |
| :--- | :--- | :--- | :--- |
| $V$ | $V$ | $E$ | A M A |

V D D L L E E I E A



V D I V L E I R L Q D S D P
$V$ S L RI QI E A V A A
I R l
I EL II E F EAQRQ
V T LTI S T E A Y A K
V V K L L T T T
V T I T L L S T E A Y A K
V EI II S A E L E K
$\left.\begin{array}{l|l|l|l|lllllll}V & E & V & M & I & S & \square & E & A & A & K \\ V & R & V & R & I & E & A & E & F & E & M\end{array}\right)$
V T L T I A GAFELQQ
I E I T L L I E GVK
V D L I V E F E A $V$ R R
$V K$ LAl Q $\square E A$ A K A
I T V N I
V T L HI A GAFERQS
V E L K I S VAAFERE
V K L Y I E I E G
I HVRI Q A E F VK T P A G A
VEI EI EAEA
$\checkmark$ D L i A A A F EK A S
V E L DVVGVFAK

V R L HI QI EA GKK | $V$ | $T$ | $L$ | $S$ | $A$ | $G$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $E$ | $K$ | $Q$ |  |  |  |

 V T L QVAVEASPA I E L L I N I EA L K A

$V$ K L S A N F E F V

V A I E L D $\square$ E A


| V |  |  |  |
| :--- | :--- | :--- | :--- |
| V | L | L | T |
| I | A A A A F E R A |  |  |

L $\mathrm{P} V \mathrm{~V}$ I N V V L
$V$ RLELA GE F $\square R$

| $V$ | $K$ | $F$ | $T$ | $I$ | $D$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $D$ | $I$ | $V$ | $L$ | $E$ | $L$ |

$\checkmark R$ L D
V KFWI DAEFTPPAP
$\checkmark \mathrm{N} \backslash \mathrm{K}$ I S VEAMKA
$V E L K A A G E F A K Q D A$ V K L V V Q VE G S K K A VEIVVVS GEFS K

VE I I V Y VEAVK
$V$ QL YI T F E GVVK A
D V L E V R V Q N A D P T
$T$ L QI QVE GVVK
VKIT A N GEFTK

V K L V F E F EANRE
V S L E I I A E G
V T L R I QVEA $\square$ A E P S A
V E I A I QI EAAK Q


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UniRef90_E6QUC9
UniRef90_E8QJ16
UniRef90_D4XIK1
UniRef90_H0DGM6
UniRef90_U7G305
UniRef90_A9BYX1
UniRef90_F4C7X0
UniRef90_M3FQN5
UniRef90_I9L578

FSDAVVIELTAKTAS\|IDTRVDDRDNHLKSPD
70
FFNVEYPTM NELGDVTATI GAGSVDTDHEARDTHVRSADFDDAEAHPEI AKTGSVTLTI NTRSLDMGFPEWNKHLTGPAFFNVAKYPSI TKA LDNVEGKI DIKSINTRNKKRDDHLRTAEFFDAMKYPKG ARTGTVEVTVDINSVDFGHDEMNKHALAPDDFDAARYPTA GSTGK GQFTIQUNSIDTRDKDRDNHLLSSDFFDAEQYSEM GELSSGKDMFKAASVVTNHEKRDDHVRNKDFDNAGAHPED

LASAKLDVSVMVATVSTMNKVLDGELVGPEWFDAAKYPTM PI ASSASTMVNS VDENEKRNHLQSPDFFDAETYPSM









A
$K K T G S V E A V M P L A N L Q Q$
F S D A VF D L T A DL PSKTNMSFTIATLDQ
DLSSKAKVTIKAHSI NTNNPDRDAHLKKSAEFFS SAEENPNM LT GAK $\square Y G E A D V M S I D T N V K E R D E H L R S E E F F N A E K Y S K V$


## 

## P N <br> N N P

 NLASRFSFAlidA LNDASFNFT KRTGSHDVRVPMKNLQTGSDAFTHHLKSADLFNAEKFPEM

 PA A A K L D V T FA I N NKL S T T S E Q F K H H L E S K D F F DAA T Y P TA K R T G S I DVVKMPLVNLQQTGSEYFTNHLKSADLFNVEKFPEM

## F

## Z

UniRef90_T2NEB5



| UniRef90 J1FGG8 | $\|V\| R\|I\| K A D G E F \\|^{170}$ |
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| UniRef90-X7F711 | V S V I L E F E A I R |
| UniRef90-E6QUC9 | I N I FVVPVEAl K |
| UniRef90 E8QJ16 | $V \mathrm{~K}$ I E L K L E A Y A Q |
| UniRef90-D4XIK1 | V ELLKI QVEA |
| UniRef90-H0DGM6 | $V$ Q FELS A E |
| UniRef90_U7G305 | $V \mathrm{~T}$ LR F GFEA |
| UniRef90_A9BYX1 | V R L VM S I E A V K Q Q |
| UniRef90_F4C7X0 | I ELAANIELI K |
| UniRef90-M3FQN5 | V K V R L D M FVEP |
| UniRef90-19L578 | TQIA I T A A F EKQ |
| UniRef90-UPI000476332D | VEI HI P MEL |
| UniRef90-D7BZJ1 | V T L E L D VT Al Q Q S |
| UniRef90_13TX02 | $V \mathrm{MLEI}$ GAAFEAAS |
| UniRef90-A1AML3 | V Q I T I T T R L K K P |
| UniRef90_UPI000367ECB7 | V R V EL D I E A V |
| UniRef90-H1Y9Y8 | I EL R A N I E |
| UniRef90-UPI0003802354 | I E I T L L I E GVK C |
| UniRef90_W4T988 | A EVSV Y L E LVKK |
| UniRef90_G8MD64 | V HVAlQ A EFSK APA |
| UniRef90_D7VZ78 | $V E V A A Y F E L V K Q$ |
| UniRef90_UPI0002D4980E | $\checkmark \mathrm{Q}$ L R I T T E A |
| UniRef90_G4QNA0 | V TLTI T TEA Q A |
| UniRef90 U7PI63 | VK F E A DVEF |
| UniRef90-UPI0002260AA5 | V T L M I A G A F EK K |
| UniRef90-D3A501 | V NINI Q I E AVK Q |
| UniRef90 ${ }^{-}$V7IF66 |  |
| UniRef90_UPI000374221F | $V \mathrm{RFQI}$ E AEF |
| UniRef90_L1NY80 | V K L A I Q I E A V K K |
| UniRef90-I2EYE9 | V ELRAS GEFKA |
| UniRef90-X0QSU7 |  |
| UniRef90_UPI0002F5BF94 | $V \mathrm{KFEASAEF}$ |
| UniRef90_UPI000419CD5F | V K VMA S L Q S S |
| UniRef90_UPI0003720843 | I T I Q L D I Q A V |
| UniRef90_UPI0003B6739C |  |
| UniRef90_U5ENV9 | V K I E L D I E L VEP A |
| UniRef90-C4K9H8 | $V A L R$ F L L A M R |
| UniRef90-C7DFA4 | V E V M I S I E A |
| UniRef90-E5U0P0 | V T L R I T V E A L A D A A |
| UniRef90-L8XVI4 | V NI QI Q A E A V K Q |
| UniRef90_UPI00035D6EBA | I HVR V A L E S V R |
| UniRef90-A8LQQ4 | V EVVLI SI E A M |
| UniRef90_UPI0003759A94 | I P V R V S L E LT P |
| UniRef90-K1ZDW8 | V E I L V S L E A M |
| UniRef90-K2P2A1 | $\checkmark \mathrm{N}$ I V V H L Q L A K Q |
| UniRef90_F0EZE8 | V TLTTL QVEAAKQ |
| UniRef90-UPI000373997C | V K T K L N L E L A A |
| UniRef90_UPI0003825B95 | V K IT T D V E A |
| UniRef90_J1JVU2 | $\checkmark \mathrm{NLT}$ T E A E F A P K |
| UniRef90_UPI0002EAA165 | $V \mathrm{~K}$ FEFH GEFT |
| UniRef90-J3GQB6 | V E LYYVT F E G V K A |
| UniRef90-T1D3S8 | $V \mathrm{R}$ L I L N A D A V |
| UniRef90-UPI00037F61C1 | VKLDI NAAFTA Q |
| UniRef90-V9HLW7 | V Q L N Q Q ${ }^{\text {a A GKE }}$ |
| UniRef90-T1XKP8 | L SLI S A A F ELEASAA |
| UniRef90-K5XVM8 | $V A 1 T I S A A F V Q K$ |
| UniRef90-UPI0003663627 | $\checkmark \mathrm{NMTI} \mathrm{NLEMAQQ}$ |
| UniRef90_V4RF79 | I GLLI EVEA |
| UniRef90-X4YYX7 | V K L N I Q V E A L R |
| UniRef90_UPI00034B29F8 | V D I V L I R L Q D A P T |
| UniRef90_UPI0004068D26 | V S I I V HLLQ F K Q |
| UniRef90_UPI00037EF512 | V K L HI E GE F V I Q |
| UniRef90_A5WHL6 |  |
| UniRef90_UPI000287B8E9 | V D L VINA |
| UniRef90-D5VFR7 | $V \mathrm{D}$ L R I E A L A V A Q |
| UniRef90-F4QZL1 | V T I RFDAEFIK E A P A A |
| UniRef90 C7LUL1 | I DLT I D M E L |
| UniRef90-J0WEF7 | L A L D I D DE A I K K |
| UniRef90-S3ZQY8 | V K I QL D MQ F L E P |
| UniRef90-V8CCG5 | V K V S I Q I E A Q A Q |
| UniRef90_UPI00035C3BF6 | V A I ELD I Q L I E P K A A |
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| UniRef90-E0TFT3 | V EL I DETEFNRP |
| UniRef90-M1FCD9 | V A L R F G E A IK Q |
| UniRef90-A0A021W2R1 | $\checkmark \mathrm{E}$ L R I E A E A V R |
| UniRef90-C5BMS7 | V T I EVY A E F Q R |
| UniRef90_B4SSB0 | V Q L R I E A E A T |
| UniRef90 V4P3H5 | I D L F I E A E A |
| UniRef90-K6UYZ8 | V T I T L E DE A VQPA |
| UniRef90-T0IYQ8 | $V E L K I A A A F T K K$ |
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| UniRef90-L0T1Z1 | V EVRI E A E A TRA |
| UniRef90_UPI00036F0599 | V H L R V E A E F VA A R P |
| UniRef90_T2NEB5 | $V \mathrm{~K}$ L A A NLIEV I K Q |

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Y E L D P Q H A H L Y F A I N H M G L S L L Y GR F D T F D ANF S V D D S

WVID K SHT QLNFTIAHFMIAKVAGHFADFS GTLTAATD
Y V A D P L H T M V VWEVVDHF GFSKY T G DF G DVT GTVLVID P N
E Y A ID N A H S R V G F K V K H L K L

Q WVVDANES E ITEFT GTQQLG
STVTGYF REFEGSAEAETD
A AFEG
Y RLDP $\square H S T V G \square S A M H K$


NFTFDGVHSS $\square$ EFQ $\square K H \square M V S K V K G T F E Q F D V A L T G D \square N$ VKFE円DPTHFYVQ\SASHLGFSHIPGDFKEVSGSYVYDSE NYABDTSLSNANFTVKHLKVVNVTGTFNDMSGNFEYEEE
 WA $\square$ D P ARSGLT F S VGHLGVHTVRGTDSVVSGRIVMAED NYAADPNHSLVVAWSVNHLGFNDYFGGFGDVSAKLITLDPA
 Y ALDPTHATLQWSVLHNTISNYTARFDKLEATMLTLDPA E YKL HENNHTWVVQFAVNNAGWANARGDFRGVS GDIVFDRD WSVDFPHS GVVHFDIQHDYSTVRGSFDEFDAVIVRFDPA Y IV N K E H S KL K F S I K Y MA LT DVE GQFD DYT IYFKK DEN
 EWSVDPQKSAI AFEAT GSGFTTMKGTFRAFKSEVEFDPA


 VE YA I E P THAFL TATVMHNGLSEYTGSFTSFDGTLDDFNED
 K WNID P T NTEATEKVRKLMVTNVIGGQKSIGEQAETATE YVSDPAHSSVVWKVNHLGLSNYTARFTRMTAELNWNAE VE YKV N P T A S Q I T F T Y K Q L G Q Q V Y GTF G Q F E G T L T F D R K K WKLDASKTKVNF SVSYLRNSTLKGRFNEDEGSINFDNN VE Y TVNTTASQI SFTYNQMGSPMYGTFGKFEATLIDDTD



WA VD P A R S A I R F S GVQVG T PFSGRFERFEARVEFDPA DSANSKVDFSVSHLKLT QVDGKFNKFSATIDYDSA
$V$ VE Y S VNAKASTIVRFTYNQMGGTAFGTFKEFVGDLDFDTA
 $L N Y R L D A T A S Q V S A R V P F F G L S S K T A R F P Q M S G N R D V P G A$
 DF S M G SVWR GKLN K S S GKVLYDK A VE Y QVLNDK S A LA FT YK QMNV PME GSFKRFRGQLSF DPA $N$ NID TAHSSVGFTATHLLVSKDSGDFS QFKGVADDEKG NIADPHKSRIGFSGMQTGV PFQGSFGKWSAEIAFDPA
 Y S I D P A Q A R V Q A K V G F F GL G S K T A H F P R L E G R V A L D R D KLPAQSEVVTSRQLGVPVEGRFKRFNAQLSFDPK VE Y QVVPA QSALSFGYRQMGVA MEGKFTKFSAQLAFDPA E Y K V DLLS H A S V VWKVS H L GL S N Y VA R FTEF DA A I N Y D S D WS I QPAAS SLTTFTGTETGAS FTGSFGSWGGQUSYDPA



K WK LDDVP K T NVE F E V N Y LGG K A M T D G R F N K VN G A $\square \mathrm{V}$ Y D V N FCQIGYFIHDETN WTLTP QSSVGFS $\quad$ SNSLGLNVVKGNFQEFKATMQFDPD YKIDKARSNLEF QAVYMLINKTKGNFSTYNGNVDFDEK

WQLD Q TA
S D 1 E F Q A V Y Y MLL I $R V N T T A S K I S F I Y K Q F G N Q V Y G F G K F D A T L Q F D S D$
 V V A N S K V G F SVVK HVK I T KVVD GVVF K N F S A NI D Y D S A
 Y RLD PA H S A V Q A R V P HMGFS VSVGRF GTVS GQLLDWNPD

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AKTGSVDTT
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(LIPLLDTGRSEFTKHLQSEAFFNAAKYPNL
 FEGAEMTLTIQTASINTNDTNRDAHLRTPEFFDVANHPDM PAAARVEVT P VAKVTTASAGLTSHLLKPDFFGA APADA SHVFKLDATVKVVSIDTNNAKRDAHLRSNEFFKVEKYPDLL FQGAKVKFSAKDDSIDTNQKDRDAHLKSADFFDAENHPNG DGASSVEVLIDVASVNTSNGDRDSQIVSPDWFDAAQWPTAA VAKSKVDVSIP VDTINTHVDALTTEFKGAEYFDVTKFPTA SAADKVNVTANTSVDTNHAERDKHRRSADFLNTAKYPQA DGSSQATATVDPSSIDTKNADRDNHLRTGDFFATDEFDKD PEAAQAKLLADDLNSUDSGSEEANTELKKPAWFDTTAYPVA
PEEGAVESTI DARACWTGGPTRDDHLRSADLLHCEAYPSAG NSAAKVTAT DVGSVNTGSKGRDEALRSAHLLDVSSRPTA PELSHVALRLPVQSLMTTAGSVTEALWGEDWLDARKYPDA PEAGQARIEIDLASIDAGSPEADEEAAGKLWFNRSVFPKA
 K KISEMQFGEAVVKSINTNNAKRDHHLLSGDFFDETKYPKM

PENSAVDTTFDGFWVGANQDRFTTHWNSADFFETEVNPTA
NEASRVVATI NPMSIQTAYPNADEKATD

PAASSAKVEDDGASVDAGSSEADDESAGKNWFNRSAYPKA AKNSSVYGEAP KN STONQLDRKLLQRNWLYANKYP
 PEAGHALLKIQLASHANGSDDANDTLQRASWFDTATYPVG NANARTTLHADLLNSIDAGSEDANTELVKPAWFDTEKFPVA PSAAHATLIIQLDSIDAGNSDANSELKKPAWFNTAAYPEA
PEAGRATVLVDLASARTGDTQRDTALPQKDWFDVASASHA
SQSLKVEGVVDIASVDTANAKRDAHLQAEDMFDAKKYPNM PEAARANLTI DLTSIDAGSDDANTELQKPAWFDTERYPQA PEAGKATVDIDVASVDAGGPEANDEVKGKNWFDVKQFPGA

## $\stackrel{\rightharpoonup}{p}$

 PADAKAELD D D PEASKAEVVVDIASLDTGSEEGNDEVAGKLWFNTQQFPVA AGTGTVEVVTELAS:DFGMDALATWARGKDFFDVKKHPRAA QLKA LDGEIEIKSIDTKNAKRDKDLLSANFFDAHEYPKG PESSHAKVTHDLASASTGDGQRDRALPEPEWFAAKDYPEA AKAVTLDVRLDAQALEAGDSLTRSRLRGPDFFDVERYPRV P EAGRID F TVVDL KLT SRASDDVNLA DSKSQVTASINPMSIQTAYPNAAEKATEKDWFNAKTFANA PEAGHALVLVDLASARTGDVQRDEALPQKDWFDVKAGSEA KAAGKLS LEADTA PEKAQFSASVDAATVDTGPASTTПNFTVFTNSTDTDRSLRDSFLRRKELLNTKQYPTM AANEKVVVRIDTRSVNSNHGERDDHLRSDDFLNVEQHPQA PKQSSTEFTMQVDSLEVSKPSLKNMLMGEDLFHASRYKTV DDASKVSVLIDVASVDTENADRDSQLDSADWFDVAQWPTA
 PETSKTHFTVDTGSATMGSKETDSNLFSADWFNTAKFPKA VSAAKIEATIATGSAQMANAQFAGMLPGADWLISEAFPEA TKSFKVDGEI DMTSVNTENTKRDAHLQAPDMFDAKKFPKM
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 AAASSUKAT: TVESINTGDEARDKHLRKDDFFDAEKYPK LASSSAKVEVDVASFEVGDATTTKEVKGKDWFDAARFPKA

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|  |  | ITEDKSDKIELSLSGKINRRDFGLTWDGTNAAGEDFVGDE


 GSAIGIFDGDLILKRDEFGLGAGEWADS

## LNQCPHHEVGFNGQVTVSRSDFGMTGLR

 D

A
AGA RAHATGHVGLVRTAFGVGQGAWEAGGQWVADE
GVGVFVGEDTLKRNDFK GEGEWADS
${ }_{\mathrm{P}}^{\mathrm{A}} \mathrm{S} \square \mathrm{A}$ LTL NADGIFDGELTLKRSDFNDGEGEWADT
N LGM FEGSFVLKRGDYGIGEGMWADYGT

## DGG

 LLATGGF SVRRQHPMLKDYCGADASGSFNREDFGGGGEWNE GDLVADE A AVFEGGFVLKRADYAIGEGVWADFGT VANE KHPKGADVYGLELQGVVSRKVFKGGQNTP PKLVGEN AATAGRLDLTRTDFGVGQGAWHHNGQWVALE TYMNGEKVAFEDKGDIKRQDFGLDYNSFHHNGGLALGKD GTTTASGQFTLQRLAFKTGDGEWADTSMVANEVQ QPFTGKPTGGFSASTNURSEFGMGKY WADGDSIGDN S K KAVAKGKDTLTRTDFGVGQGAW SSGDYVGLK DTARAAGRVG EDTATVTAEVHLDRSSWGLTYM SND PDPWGGYRSGFEAGTTIKRSDYGMNYGLGEGQGG AVGNE NDPVTSRTLKFRATGLVDRYNYGVT MAGMEKVISND GNPNGLDVGNGSTTVINRSDFGMKK STAEATAGVGEK N EADAEGTLVIKRTDFGVGQGQWSDTS QVGDP S
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| UniRef90_X2HI46 | $\|\mathrm{V}\| \mathrm{K}\|I\| \mathrm{N} \backslash \mathrm{Q}\|\mathrm{I}\| \mathrm{EAAR}$ |
| :---: | :---: |
| UniRef90-FONXN8 | 1 K 1 L S NLE F |
| UniRef90-UPI0003B655C9 | VQLRFS GE |
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| UniRef90-Q1GUH9 | IVELEIHAAFEKQ |
| UniRef90-E7ACI3 | VMLDI EDEATQ |
| UniRef90_E1K1N0 | V DI HL A GETLAPRP |
| UniRef90-I5CA11 | VRLLLS VQLVKQA |
| UniRef90-K2KNK6 | V T I KI E I E A M R P K P A |
| UniRef90-X0Q8C5 | VTLTAEEEL |
| UniRef90-D8MM48 | VKLTIS T E A Y |
| UniRef90-H5N856 | V DL I I S VE GVQQ |
| UniRef90-G5JJY9 | $V \mathrm{~K}$ FEAAVE |
| UniRef90-C8N9U8 | I A V K V S GE G $\square$ Q A |
| UniRef90-G2HKH0 |  |
| UniRef90-S6HUl3 | I D I RL R MVA PQQ |
| UniRef90-E6PET5 | 1 DIV V DVEG |
| UniRef90-H8IKZ9 | $\vee \mathrm{G} V \mathrm{~K} V \mathrm{RL}$ E A ASAAAT |
| UniRef90_UPI0003B760DA | VKLNI T I A F EKTA |
| UniRef90-UPI00046F6A04 | VKLTLT GV |
| UniRef90-Q3SK13 | V R V K F R I |
| UniRef90-B4W635 | VTIRFDGEF |
| UniRef90-A0A037ZG95 | VEVFIDAEAI K Q |
| UniRef90-D8FB27 | AKI M ${ }^{\text {c }}$ S 1 |
| UniRef90-TOCBH6 | VIIK FTI |
| UniRef90_UPI000373C521 | VTI RIS AEFVEKESAA |
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| UniRef90-E3ION7 | VKLSI D L A A |
| UniRef90-H5T7W5 | V KVMI EGEFAKTQ |
| UniRef90-UPIO0028904B3 |  |
| UniRef90-B8J1Z2 | V HVAADV |
| UniRef90-14WPV2 | V S V W W e b e |
| UniRef90-UPI0003AA4BFC | V VVEFS GEFL Q E EAA |
| UniRef90_UPI0003653598 | V K V K F R |
| UniRef90_S3N0A3 | MFI H $\square R A$ |
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| UniRef90_UPI00036112C6 | VTVIIETELQPPQA |
| UniRef90_UPI0002D4A90C | RI K FK M V A |
| UniRef90-UPI000476BED2 | $\mathrm{V} P \mathrm{I} \mathrm{VI} \mathrm{T}$ GELIP |
| UniRef90-J2MTU7 | I AIVKKVVAPQQ |
| UniRef90-E0TDF4 | V Q L S F |
| UniRef90-A0A059E845 | 1 HLT T EAEFAKAA |
| UniRef90_A0A010SUK5 | 1 NI K FRVVAPEQ |
| UniRef90_Q9RUU4 | V NVRVNI QVTPQS |
| UniRef90-19LFI9 | V GVDVDL VATARAPA |
| UniRef90_UPI00047D756C |  |
| UniRef90_J3DG63 | 1 NI QF RMVA |
| UniRef90_UPI000371DF2A | VQI R F R L T |
| UniRef90-H2K424 | T I T A A L R F TRAA |
| UniRef90-A3WI33 | VDIKLDARMVP |
| UniRef90_U7DH96 | I NI R F R M V A P Q Q |
| UniRef90-UPIO00362744F | VQI KFRLVAAAAA |
| UniRef90-UPI000376D911 | VPVTFSLTLGPAA |
| UniRef90-A2SFT6 | V D L R $\square \mathrm{Q}$ V E A $\square \mathrm{A}$ Q |
| UniRef90-UPI000475DC85 | V QIK FRLTAAPK |
| UniRef90-K4RIP2 | I QVA I HL E |
| UniRef90_B8EMIO | V GVDVDLKATKA |
| UniRef90-A5FKH3 | KLIANLE |
| UniRef90-F3X1T3 | VTI A I D A |
| UniRef90_UPI0003716452 | V R F K L A LTGVP |
| UniRef90-D9SFW4 |  |
| UniRef90-K7APS6 | VEVLIEGE |
| UniRef90-K5YPA4 | V DVAFT LT A T |
| UniRef90-B1M473 | V GVEVDIVAT ARPA |
| UniRef90-S4XRS4 | $\checkmark \mathrm{L}$ L K L S L K A PRKQ |
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| UniRef90-X1Q788 | VEEI TLLIEGITK |
| UniRef90_Q1Q9M8 | 1 PLEI S GKLI A A |
| UniRef90-F6DB26 | V Y L D L HVE Gl K |
| UniRef90-N8WNZ0 | VNI HL |
| UniRef90-V8CCA6 | I E I Y I E T G A |
| UniRef90-K2M103 | VTIE I DIEA |
| UniRef90-UPI00037E24F0 | TV T T T L R F L R T A |
| UniRef90-I4ALZ0 | VK V Y $\mathrm{D}^{\text {D }}$ |
| UniRef90-A0A031FQ76 | I SITTFKVVAPQQ |
| UniRef90-A0A014NPC6 | $\checkmark N V Q F K L A L T$ |
| UniRef90-UPI0003AA5F95 | VAVTVDLTATR |
| UniRef90_C3XN15 | VEI TL L L K A N A Q |
| UniRef90-UPI00016A5D5F | VQIKFHIVAAK |
| UniRef90-M4SKZ9 | V A V D FRFSA $\square$ R K |
| UniRef90-A1B4H6 | I T I El D A E F A Q |
| UniRef90-A5FTL1 | V HI VI HA |
| UniRef90-N9CC92 | V D I K L G Q |
| UniRef90-A0A024INI7 | VAFDI D L K GVR |
| UniRef90-Q11Y44 | V DVKLKVTAAK |
| UniRef90-V2G784 | VQI K FRLVTAAKS |
| UniRef90-W7QAJ7 |  |
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| UniRef90-A1K911 | ILVKKFVVQAA |
| UniRef90_A0A059KSM5 | V K F K L N L $\mathrm{S}_{\mathrm{SG} \mathrm{V} \mathrm{P}} \mathrm{A}$ |

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UniRef90 Q47CA6

| UniRef90-N8YYW1 |
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| U47CA6 |

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UniRef90-R4WT85
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UniRef90-UPI00036CF2CF
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UniRef90_Q63LJ1

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WQLIDPAAT 10 K 20 ${ }^{20}$ TTV 30 GVA GQGEVRP

 WQLAPGG KLGFHATYSGDA IIGSFGRWDAKIVFSPD YKFDNTHTNAVFNDDHFQTSTNHGGFYADSGELKYQPE
WQTDYES R

 WQLDRTATTVALKHRTMGLVTVKGTFTTVDGHGEVRAD WQLDATTSTVGIRHRTMGLVTVKGGFGAVSGTGEVRPD E WKVQPETSKIAFTA YSRMHDAFKQWAFDGKDSD
 WSV A GAV N WS V A P G G $\quad$ R $\operatorname{L}$ L G F T A A R WN G E A
 I VPAKS SVVTFSYKQMGVA MDGRFKKFAA QVNFDPA $N W V V A K G G T$ LGFSARWNGEPDVGRFARWTATILFAPA
 QVQADKTRVDFVFKQMNV PI EGHFGKVRTDLVFDAA


VE Y E VQPDK S R IA F D Y Q Q M GVA M Q GTFGKFASALRFDPA Y AVDTVQTARVHFQAKSL FGAYRGDFVEPMGAVADDPQ RYELDPEHTTVAFTVQHVGYAATDGLFAEVEGGFVYDME WS L T A N S QV G F H D S L GVN VVK G Q F Q K V Q S QLID F D DN $R$ L L A G S HII RFTSRQMGV PVVDGAFRKFDASSLAFDPA WT LDPA GS SI A A R S RTMGLVPVVVRFTEFTGEGELAAA RWTLQQKTGTS L GWSTT FQ GETID GAFDRFSADDAFDPD RFVFD QRRTEVRF DYKIA YAKQRGRFTKVSGTLDYDEK

 Y RLVP ER S SVA LVSVQ I GH TH LRMRFRRDDAELDRPP G
 WTVDKASSSIIRFSTSFEGDA IVNGFGSYTARI DFDPE
 QLQTARSKVGFSFTQMGV TLDGHFERFDGELRFDPA



NWSI ${ }_{T}^{Q} P$
$T$ QK Q S NVGFY Q S M GVK
 $K L V A D K S Q I V F V T R Q M G V$ V VIEGSFRKFDAQVAB DPK QV DVKK Q S AI NFSYQQMGVA MDGKFNEFTSTLKFDPA V N A E K S TVV WK G Y K V V T G S H E G TVVA L K D G H L E F D G D
 F N Y Y Q NPTASRVTWTGYAEVGS

NWE ID P A T S E
$R W R \vee L P G G$ LE Y K L D TQA K Y KV DTAA K

##  <br> K WA I



 LDVT Q S EVVKATFK QFNV PVVSGNFKK F S G DVQQYD PA YK L D T QK SVL K WN GK K V T GEHY GTVVK I Q D G S L M L D G S WT L D A GTS SVVEFTGRHFFF LPVTGGSLPVRSGSAVLRGG
 K S AL GF TFK QM GV P VE GTFK T Y TA QVVSFDPA $W T V Q P G G R R G F S V G N S G$ G TIISGSFAKWTAKIAMDPD $R W V L D P A G S T V R V R H K T F G L A T V S G E F T A V S G E G E V A A D$

QVDTDKS SVK WE G K K IGGS H N GADLLLKEGSFTLKGS
 P Q T A NI S F K $\square K M L G$ A TVQGKFS GLVSS SIKFDND Y VLD Q D Q S S L K WT GYHKGGFDPRF GTLDKTEGTVADVH N


Y S I D T T A S QV T WQ GTHKGGLAPRFGNI KV TGGSLSVEN RYRLDAARSTVAFTYR $\quad$ TGGAANSGQMPVKSADMRLDDLD WAVQPGGGRIGFSVGNGGGETDSGSFSRWTAKIAMDPD

 RYRLDPRHS GVTFRVDNFWHAHLLMRFARMRAESDVGDD

|  | UniRef90_K4Q |
| :---: | :---: |
|  | Ref90-E8R |
|  | Ref90-V4P |
|  | UniRef90_A9BY |
|  | UniRef90 UPI0003B584C5 |
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|  | UniRef90-UPIO0026C7A3 |
|  | UniRef90 B5HTs |
|  | UniRef90 D9X0 |
|  | UniRef90 UPI00023782A8 |
|  | UniRef90- |
|  | UniRef90 FiM |
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|  | UniRef90-D5WGF9 |
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|  | UniRef90 W9 |
|  | UniRet90 A0 |
|  | Uni |
|  | UniRef90 ${ }^{\text {O5P13 }}$ |
|  |  |
|  | UniRef90 ${ }^{\text {W6M }}$ 3P1 |

GSAV GTVTL 50 A ${ }^{60}$

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RLDSKATVVIDLASVNSGDQTRDDTLKSDSFFNTAATSKA QLDSRVKVTVDLSSVSSGDNDRDGSLKSDAFFNVAATSKA DLASTLRATIDLASVGTGDAQRDDMLKGDNFFRAAAHPQA KQDAEMRVTVPVSALNTGVDAFDNH|ASSDVLDAEKYPEAD




| UniRef90 K4QTR1 | $\mathrm{T} \mathrm{~V} \mathrm{~T}_{\mathrm{T}} \mathrm{~T}\|\mathrm{~L}\| \mathrm{R} F \mathrm{~F}_{\mathrm{T}}^{170}$ |
| :---: | :---: |
| UniRef90-E8RT58 | VSLDLKVTAT |
| UniRef90-V4NPJ0 | $\checkmark$ DISLKAKAAK |
| UniRef90-A9BYX2 | $\checkmark \mathrm{Q} V \mathrm{QF} \mathrm{K}$ L ${ }^{\text {a }}$ |
| UniRef90_UPI0003B584C5 | V TVDFALKAKRQS |
| UniRef90-IOA9D4 |  |
| UniRef90-UPI00047C687C | IQFVLHA |
| UniRef90-K2BPR9 |  |
| UniRef90_UPI00026C7A3D | V TVNF K AVA Q Q K |
| UniRef90-B5HT56 |  |
| UniRef90-D9X094 | T TVT T T L R F V R A |
| UniRef90-UPI00023782A8 | VK FKLALT GVAK |
| UniRef90-H2CEC6 | VKLVFKVALK |
| UniRef90-F1W3Y6 | VAI KFHLVVVAA |
| UniRef90-B9QZN6 | V R L Q IK G T G K R |
| UniRef90-Q1GTV2 | V DIA A AFTATRQS |
| UniRef90-D5WGF9 | V VIK F HLVA |
| UniRef90-14WT76 | $V \mathrm{~K} V \mathrm{~T}$ A HL QLA P K |
| UniRef90_UPI0003038FC0 | 1 QVNFS |
| UniRef90-W9BS46 | VAVSFDFQATA |
| UniRef90-A0A031GWT4 | V T I K F HVAA |
| UniRef90-N9CN87 | $\checkmark \mathrm{NI}$ QLS GQ |
| UniRef90-Q5P134 | V D V R F H A V ${ }^{\text {a }}$ |
| UniRef90-F0S6X5 | AEI 1 |
| UniRef90 ${ }^{\text {W6M3P1 }}$ | VQ I KFKLRLK P |
| UniRef90-D8DCI8 | VAI R $\square$ T V E A $\square \mathrm{GK}$ |
| UniRef90_C4ZM98 | V VIRFRITAAA |
| UniRef90-T0K4F3 | VYLD ${ }^{\text {P }}$ A T F T |
| UniRef90-X7EEE2 |  |
| UniRef90-N9EIF5 | VNIQVS G Q |
| UniRef90-Q128H5 | VMVQFHLVL |
| UniRef90-IORQB0 | VTI S GDLVF |
| UniRef90-V4RCY1 | VKVVVRLNA |
| UniRef90-F8JAY6 | V DI EII EAI A |
| UniRef90-G8THX3 | L TVNLKVVARK |
| UniRef90-A5PB91 | V DIEI R |
| UniRef90-B9JYU4 | 1 NVNI VVNATK |
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| UniRef90-A4G1Z9 | V T I K F R V V $A$ |
| UniRef90-UPI00035C5480 | $\checkmark$ VI KFRVTA |
| UniRef90-V4PM19 | V TV K L K A R A |
| UniRef90-UPI0003716E70 | VTI EFSGEFT |
| UniRef90-N6YTG6 | V R V R Y Q 1 S A T |
| UniRef90 UPI00046F5A0D | $\checkmark$ |
| UniRef90-G2IWF1 | VQDK R R VA F P A A |
| UniRef90-Q47CA6 | VQIK F Rlit A |
| UniRef90-N8Y9W1 | VNLVVDGQ |
| UniRef90-G2KP59 | V K I T I H I Va K K |
| UniRef90-19WGV3 | I T L VLD AEFHK |
| UniRef90-Q7X2V2 | V VI KL S L K |
| UniRef90_UPI00047647EB | V Q V R F R FT |
| UniRef90-C4LA56 | I QVKF T I T A N Q Q |
| UniRef90-W2USD2 | F D L VVDL |
| UniRef90-F3ZPC6 | MDVQI VIT A |
| UniRef90-E1PKH6 | VNI AL KI A A |
| UniRef90 UPI000407DCDB | L Q L T L DVVA TR |
| UniRef90-Q9HIU7 | V N L N V Y L S S F K |
| UniRef90-W8F4B1 | FTLAFEVVAAR |
| UniRef90-W7WS81 | VQVKFKL ${ }^{\text {a } L \text { T }}$ |
| UniRef90-UPI0003F74302 | V R V S I |
| UniRef90-K1M4Z1 | VRVII EF |
| UniRef90-A0A059DQN7 | V TVTVVKGTATRK |
| UniRef90_UPI000474FD2B | $\checkmark$ S FRFDAA |
| UniRef90-UPI0003FD14BB | FDLK\NLVGKK |
| UniRef90-M7MI60 | ПELQINITATKA |
| UniRef90-R4WT85 | V VI K F Hi Va AKK |
| UniRef90-A0A023BSC2 | 1 El K L S LKANKA |
| UniRef90-G8TBG3 | I KI DVAVPVTK |
| UniRef90_UPI00035C912B | V K I Q V E Y S All |
| UniRef90-UPI000365F826 | VEVDISLVGKR |
| UniRef90-A6GL67 | V VI D FKLVAPAK |
| UniRef90-I2GJ11 | FTVEINAVASKDGAA |
| UniRef90-B5HJQ6 | LR L RVTA AFVRTA |
| UniRef90-Q97BT6 | ARVEAYLTFEK |
| UniRef90_UPI0004710D08 | V K V T L K V Q |
| UniRef90-UPI000379CAAE | VK FRFTLT GKP |
| UniRef90-TOKHY1 | $V$ T F GFSAKA |
| UniRef90-D9WCK3 |  |
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| UniRef90-W7YPH0 | F TLDISI |
| UniRef90-UPI0004177232 | FELNI NLVAKK |
| UniRef90-UPI0004028827 | VTFSI VLNA】R |
| UniRef90-U2J197 |  |
| UniRef90-K0UIH9 |  |
| UniRef90-C6W7B2 | FTLDVNLVANK |
| UniRef90-F4C7N3 | VEI GFDL K AVKK |
| UniRef90-A6FQ90 | I GIIRIVARITK |
| UniRef90-T0GS96 | V D F S F S A |
| UniRef90-UPI000463F38D | V D F D M M ${ }^{\text {a }}$ A GRR |
| UniRef90-UPI00036CF2CF | $\checkmark$ a 1 S VR FVa |
| UniRef90-UPI000479424B | IKIVANVAF |
| UniRef90- Q63LJ1 |  |


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D K LIG G T F TI
60
70
80 GDKITGTFLINMATINTTDNKLDGHLKSADFFDVTKYPDA N KENDRIDVKIPITTLQASNSLLTYQLKSSDFFDAEHYPDI IVVNMNSIVVNDIDPVEEEENAKLTGHLMSADFFNVESHPTS PEAGHAKITIDMASATTGDAQRDGALPGHDWFDVKTFPTA NLASRVDVTLDATGTRAGFFFATEAMKGPDLLDTARHPS PIGTSVEAYVDVATDHTGDSARDDF GLSRELIDAEKWPRM KLKG GTFLMDVKShNDMNGKLTNHLKSDDFFSVEKHPQA NENDQQQVTPVATLVASNSLLTWQLKSNMFFDAARYPT D PAEGKLEVSINLASAATGNTDRDSTLRTADFFDGGRHAQA GKVDSGNFLIDMNSITVTDLLEGDAHLKGDHFFNTKEHPTA NADDRGHVTVPVATLVASNSLLTWQLKSDMFFEAERYPTD $R F$ VKGEFVVDMTSLSNTDAKLDGHLKSDDFFSVEKYPTA
$P K E S F F N A E I O V N S I F T D S K S R D E H L L E A D Y F D A E K Y P K ~$ RDTAVVEATVDVHSVAMTSSRDRRWVLD
GVLLHLDAAVGAAGFESGNPQRDAAVRGPSLLDAERFPEL PAEARAHFDIDTASFDTGDDDYNAEVRKPEWFDTAKFPKA PSKGSLK $A$ EA D S ALDSKLTVAIVMTSAKTGDDQRDASLPSDDFFAAAAHPKA SVTG GSLVVDMNSISCSNAKLVGHLKADDFFGTEKFPTA


## P


 KLTGTLRDVDAASVRTGDKRRDAHLRSPDFFDVEAFPTV GQVAAGNFIIDMNSIDKKPADLEAHLKNPDFFDVAKFPTG GKLKGGRLLVDMTSIETDNRKNEEHLKSGDFFAVKKYPTV
UniRefio-UPIooo374222C UniRef90-H8G833 UniRef90_Q1NG34 UniRef90-R5A1D3
UniRef90
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UniRef90 UPIOOO4779EC7 UniRef90-U5T1J6 UniRef90-18TCC5 UniRef90-UPIO0046EBB3F UniRef90- ${ }^{-15 X 0 Р 3}$ UniRef90-UPI00041ABA1E UniRef90-E4RZ38 UniRef90-A0LYP1 UniRef90-G8RHT4 UniRef90-UPIOOO262B030 UniRef90-F4L2C0 UniRef90 $13 Z 238$ UniRef90_10AN11 UniRef90-UPIO00381A309 UniRef90-FOIE50 UniRef90-M7N159 UniRef90_G2Z5U8 UniRef90-W2UTC3 UniRef90-G2NV90 UniRef90_L8JJ15 UniRef90-B9XPP5 UniRef90-UPIO00465C87D UniRef90-C1F2Y UniRef90-E1WZF1 UniRef90-FOIDA6 UniRef90_UPIOOO2880A28 UniRef90-J2JVA6 UniRef90-UPI0003B55DDA UniRef90_U2AV04 UniRef90-UPI0003F803E1 UniRef90-E8U385 UniRef90-C8X5Y5 UniRef90-F2 $25 \times 3$ UniRef90-A3XR59 UniRef90 A2TZW5 UniRef90-H6L5U4
UniRef90 VgVPU2 UniRef90_UPI0003793493 UniRef90-A0AO59GBM2 UniRef90_F9YQU8


|  |  |
| :---: | :---: |
| UniRef90 A2TWD3 | ANMTLTERNSAEPFTIDRTNWGVNYGSFDNLGDKFIKDE |
| UniRef90-l2EYC6 | TN AQLKSNFQVNRLEYEVGEKSSLLGNVATV |
| UniRef90-G74 | RTAQRDER ${ }^{\text {a }}$ ALHAMTISRSAYHM |
| UniRef90-C6DJ41 | GTSSHDGSLSLHATTAISRSSFNM DRFTGVV |
| UniRef90-S7VSG3 | DTMTLTSEA GTIDRSKWNUKYGSFDDLGDK |
| UniRef90-A3Z | KIDR |
| UniRef90-UP100046E | Th HAKGHLDP |
| A6DUZ3 | TDPKDLSHCTM |
| Ref90_TOYML3 | ANPSEIGRVMLH |
|  | DGAVPIKRLDF |
| UniRef90-UPI000472C6A4 | KVQAEAKVTVDRTKYDLKFNFFEN |
| UniRef90-G2S6F6 | PS SLTLNATTAISRSAFG |
| UniRef90-UP100030BBC70 | PQP VLTGRAVVQRLDFG |
| UniRef90 JoV | DS NGTATAKADVIVDRAKYDVRYGSFDDLGMDKVI |
| UniRef90-16SHL9 | AHD LTLDATTAISRAAYGMD GSFDNGDKFL |
| UniRef90-UP | GVLTVDRSQFDV |
| UniRef90-UPIO | KENTVFKANFKLDRKDFNVGGNSF |
| UP100034CAB | CTLRRDTTCRIEVRGQRRSDYGMNA |
|  |  |
| UniRef90- M5RY37 | EDMLVLAANFDIDRTKWGMTYGK GKI |
| UniRef90-ROCVII | D MATARGVTTLDRTAFGVGQ |
| UniRef90 F5Z1F5 <br> UniRef90 H8KNB | GDGGVRLTT ETTVTRKQFAVEGNFLG |
| UniRet90-EOSCN1 | GADPTGGTLFLHATTAISRSAFDMDRFMAL VDDR |
| UniRef90-B9NT30 | SAADDLDMLSIGLVGTLNRHEFGASGYAD |
| UniRet90-UPIO004256 | N KVIAEAKFNNRKDWGMSYGDDESLLGDKFIRPT |
| UniRet9 F8EIR9 UniRef90-B4VKK7 |  |
| UniRet90-A4WDJ9 | DDRKVTDA】SLHATTAISRSAWHM |
|  | SE Lillill |
| UniRef90-W811G3 | WNSRSTSFIIRGSIFRSPYGM AYM DVGTPUYSNV |
| UniRef90-U5W634 | ADGYR ${ }^{\text {a }}$ |
| UniRef90-V5XAE2 | VQLSTTATLNRRNLGVD |
| UniRet90_UP100041B9 | ALVVDRTKYD |
| UniRet90-D7W | NS AADQAKFTVNRADWGK |
|  | ND VTAHAKFTIDRSAWGVHYKTEGSPENWA |
| UniRef90-FOIE51 | RS wS |
| UniRet90 UPI00037 | GDSFSRRVISARAQGDYRDRYNSS |
| UniRef90-Q1NG34 | A TRRVRGПASIARAAYDVGNGE SGGSLAPQ |
| UniRef90-R5A1D3 | CD GQVCFHLTSEVDI DRLEYGVGQGYWANT AEVPNE |
| K5K | KDP HAQALTLDATTAISRASYG |
| UniRet90-EOMR33 | ANTVSATIP, KRLDDGGVGA |
| UniRef90- UP10003730094 | VA TGDVQI DRSDFDIRYGSFDNL |
| UniRef90 UPI0004779EC7 | NV |
| UniRef90 U5 | QARMEGSVA DRTRFGVGQGDWSDPSVA GHE |
| UniRef90- UPI00046EBB3F | D GALVIVSNTFNIDRTKWGIGYDSFKDLGDHLIKDN |
|  |  |
| UniRef90-UPIO0041ABA1E | AN AKLSIDRTKYDVRYGSFDNLGDK |
| UniRef90_E4RZ38 | NDGL FHGKFSVNRSDFKL |
| UniRef90- G8RHT | ESGGMR LATKATINRQNFGVDGNMMGGLGDK ${ }_{\text {L }}$ |
| UniRef90-UPIO00262B030 | RAGYDCDVIS RGTVLRGRYGMDKW DDALSDR |
| UniRef90-F4L2 |  |
| UniRef90-13Z | NSEQTKMEATATGKITFDRTKYDIKYNYFENLADKMIYDE |
| UniRee90-OAN11 | EQGGMLKASTPKFNJ |
| UniRef90_F01E50 | LSSTVDIDRTQFGIKYGSFSNLG |
| UniRef90-M7N159 | N AAEALARIVDRSKFDVRYGSPAD |
| G2Z5U8 | KFGKYGSFDSLGD |
| UniRef90_W2UTC3 | A DYDREAHTLTAKFKIDRSEWGI NYNAVAKVKNHA |
| UniRef90_G2 | DPEGTLRR GWASVTQSTWGIKPYSAF LGALK |
| UniRef90-B9XPP5 | DPNLKGDLLVIRSTFTVKRSDFGIN |
| UniRet90-R9CMY5 | $V T$ KSEKKDI NRRDFGV |
| UniRef90_UPI0004 |  |
| UniRet90_C1F2Y | GSFVVPYVEWGMKDPTMMFMKEA KD |
| UniRef90-E1WZF1 | , |
| UniRet90-FOI | DSEVTLESQPFNINR RVDFGVNYGSFADLKDKF |
| UniRer90-R4 ${ }^{\text {UnN6 }}$ | GDGT ATASA |
| UniRef90-J2JVA6 | NS AAlEAKFTVNRADWGIKFGSEAD |
| UniRef90-UPIO003B55DDA | EG R R IVVEAHFDLDRTHWGVNYGSFRFLGYHLVYDM |
| UniRef90_U2AV04 | RVDFGVNYASFGDLKDKFI NDE |
| UniRef90_UP10003F803E1 | N |
| UniRef90-E8U | ANALKGDALA |
| UniRef90- B1ZPR3 | NDPLKGDLLVMRATFQINRSDFGUQSGQMTD GFMV |
| UniRef90-F2J5X3 |  |
| UniRef90_A3XR59 | SKYN |
| UniRet90_A2TZW5 | AEFNVKYGSF |
| UniRef90-H6L5U4 | T K RSVWGIl |
| UniRef90-V9 | TAADDLRELDVHLNGSLSRAAFG |
| 迷 | D TATAKGRMQVDRRDFGVGSGYADES TVGFA |
| UniRet90 A0A059 | $\begin{aligned} & \text { DA } \\ & \text { BF } \end{aligned}$ |


| UniRef90 A9E1R0 | $F D L H V E L K F$ |
| :---: | :---: |
| UniRef90-A2TWD3 | $\square \mathrm{Q}$ L T V K L Q A T K A |
| UniRef90-I2EYC6 | I T L N V Q |
| UniRef90_G7UJA4 | VT I K I D I Q A |
| UniRef90_C6DJ41 | V A I N I El R A K A |
| UniRef90_S7VSG3 | I ELLKI T L T A N K A |
| UniRef90_A3ZRR5 | $\checkmark$ A MTI E V T A |
| UniRef90_UPI00046EA4E2 | $\checkmark \mathrm{G} V \mathrm{D} V \mathrm{D} V \mathrm{~T} A$ |
| UniRef90-A6DUZ3 | I GLLR\\|VAQ |
| UniRef90-T0YML3 | $\checkmark \mathrm{N}$ |
| UniRef90-J3DFA8 | V T I K F H V V |
| UniRef90_UPI000472C6A4 | FTLDVNLVA |
| UniRef90_G2S6F6 | $\square \mathrm{A}$ I D 1 N I GA H P Q |
| UniRef90_UPI00030BBC70 |  |
| UniRef90-J0V5M6 | F TVVS L D T T A K K |
| UniRef90-I3C0W4 | $\square \mathrm{ELTV} \mathrm{V}$ TVK A N K A |
| UniRef90-16SHL9 |  |
| UniRef90_UPI000255DCFE | FDLA F EVVS F |
| UniRef90_UPI0003718B15 | VDI K M T Y V S T |
| UniRef90_UPI00034CAB48 | $V D L G L L I T L D A A A$ |
| UniRef90_UPI000262F9E5 | $L \mathrm{R} V \mathrm{R} \mathrm{V}$ R A E F VRE |
| UniRef90_UPI0003B5F861 |  |
| UniRef90-M5RY37 | V A I R A LLV V K R |
| UniRef90-R0CVI1 | V K V S F A L T A K R K |
| UniRef90-F5Z1F5 | TKLK K S SVVFRK |
| UniRef90-H8KNB3 | F T L K I S L V A A K |
| UniRef90 E0SCN1 | VA I N I D I Q A |
| UniRef90_B9NT30 | $V \mathrm{GL} \mathrm{N} \\| \mathrm{HAESVRQ}$ |
| UniRef90_UPI000425601F | V H I G F F , 1 |
| UniRef90-F8EIR9 | V T I R L T V N A I L K |
| UniRef90-R4VKK7 | $V \mathrm{Q}$ V D L T L R V A |
| UniRef90_A4WDJ9 | 1 NIK I D I H A |
| UniRef90_A8UJK0 | F K L K G N L K |
| UniRef90-W811G3 | VEFDMNIK GQK |
| UniRef90_UPI000237D9D6 | $V \mathrm{~T}$ LII A GAFAK |
| UniRef90_U5W634 | V K V R I E CVA T A |
| UniRef90_V5XAE2 | GVVEAA AVFVR Q |
| UniRef90-UPI00041B9DA6 | F D L A V $\mathrm{L}^{\text {L }}$ |
| UniRef90-D7W1V5 | I E I A l D V K A K K |
| UniRef90-W0F591 | V E L G F T L K A N K K |
| UniRef90 FolE51 | F SLNVT |
| UniRef90-UPI000374222C | VEFNMTVNGQK |
| UniRef90_H8G833 | L D F T L A V R F V R |
| UniRef90_Q1NG34 | $V \mathrm{~A} \mathrm{~V}$ T FD F T A R R K |
| UniRef90-R5A1D3 | V TVVA V DVYa $\square \mathrm{Q}$ Q |
| UniRef90-X5GKH8 | I A I A I A I K |
| UniRef90-E0MR33 | V DVVMDI R A T R P |
| UniRef90_UPI000248FD6F | V G I K I A V T A S K |
| UniRef90_UPI0003730094 |  |
| UniRef90_UPI0004779EC7 | V VI R F D T A P P Q |
| UniRef90-U5T1J6 | V R V V V D L T L S T Q |
| UniRef90-I8TCC5 | V R F R l S V |
| UniRef90_UPI00046EBB3F | $\square Q \square E F N L K G$ |
| UniRef90- ${ }^{\text {- }}$ - ${ }^{\text {P0P3 }}$ |  |
| UniRef90_UPI00041ABA1E | $F D L E V N L K F$ |
| UniRef90_E4RZ38 | V DVEI NLPVIK |
| UniRef90_A0LYP1 | I T L K I N L K A K K A |
| UniRef90-G8RHT4 | V T I S GDLVFR R |
| UniRef90_UPI000262B030 | V T FVVLRARLT E A S |
| UniRef90-F4L2C0 | FDLEVSLVASK |
| UniRef90_I3Z238 | V T L DVIL V G M K |
| UniRef90-IOAN11 | I EVNVNIV G S N K A |
| UniRef90_UPI000381A309 | $\underline{L} \mathrm{G}$ L Q I E L V A G K |
| UniRef90-FOIE50 | F T I Y V Y L |
| UniRef90-M7N159 | F I I D K L Q |
| UniRef90-G2Z5U8 | $F E L K V N L Q$ |
| UniRef90-W2UTC3 | $\square \mathrm{I}$ I E |
| UniRef90-G2NV90 | $\mathrm{V} \mathrm{R} V \mathrm{~F}$ F EVT G S E P A P |
| UniRef90-L8JJ15 | F R M V VKLVGKK |
| UniRef90_B9XPP5 | 1 EL L L SLA G Q A P |
| UniRef90_R9CMY5 | V S L Q I NVKALE K |
| UniRef90_UPI000465C87D | $V \mathrm{~N} V \mathrm{STR}$ T V L K P |
| UniRef90-C1F2Y0 | $\checkmark \mathrm{K}$ I D L T L D G |
| UniRef90-E1WZF1 | $V E M T V K L S A$ |
| UniRef90-F0IDA6 | V E L V V K V K A K K |
| UniRef90-R4TBN6 | IT I AL DVVLA P P |
| UniRef90_UPI0002880A28 | FDILVDL K F |
| UniRef90-J2JVA6 | IE I AVNVK A K K |
| UniRef90_UPI0003B55DDA | V S VRARLVL |
| UniRef90-U2AV04 | V ELVVKLKAKK |
| UniRef90-UPI0003F803E1 | I E L Ql T I VA K A |
| UniRef90_E8U385 | $\checkmark \mathrm{A}$ L K F |
| UniRef90-C8X5Y5 | V DLEVD $\quad$ R A H R |
| UniRef90-B1ZPR3 | I H L S L S I A G A S P Q A |
| UniRef90-F2J5X3 | $V \mathrm{E} V \mathrm{~S}$ F A L T A K A |
| UniRef90_A3XR59 | F TLD $\square \mathrm{NL}$ |
| UniRef90-A2TZW5 | M E M S FVVK |
| UniRef90_H6L5U4 | M GLK I SLLA A |
| UniRef90_V9VPU2 |  |
| UniRef90_UPI0003793493 | V GI S FDLT A K R Q |
| UniRef90-A0A059GBM2 UniRef90-F9YQU8 |  |

UniRef90 UPI00029A3A51 UniRef90-A3UBK7 UniRef90_UPI00037A804A UniRef90-UPIOOO37B2473 UniRef90_UPIO00409ABEA UniRef90_JXXJ39
UniRef90-K411666
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UniRef90-JoW640
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UniRef90_UPIo0047DB663 UniRef90-E8Y139
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UniRef90-V9VQ77
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UniRef90- $\mathrm{Q6ANQ}$ UniRef90-UP10003B4DD6A UniRef90 UPIO003B48D15 UniReffo-V6SET8 UniRef90-DolwV7 UniRef90 E1WX84 UniReffo-M7X824 UniRef90-E1Y932 UniRef90-A1B2U8 UniRef90-UP100035ECF1F UniRef90_V6S757 UniRef90_UP100046A7EDB UniRef90-UPIOOO4660C05
UniRefgo-UPIOOO406D64D UniRef90-UP100047C839E UniRef90-UP10003FCA5CC UniRef90-E4U715 KYKVDTAASSLLMWMGSK NWTIDKENSKIEFSFTY RYRIDGDRSTIRFHTRH

20
30
40 YAlDTANSEVTWDGSKMGTAPVRGRFGMETGHI EVADP


DTESSSIQWTGKKMDGASHQGVLSFKSGELVFSKE
YRLVPGATEVRFTFL LNGQPQQGRLPVRAAR1 RUDQN
ENSKVVWKGYKVTGSHE GT円A贝KSGFLNFNAD
YNVDVEQSKINWVGSKPAGEHNGQVSISEGTLQVEGD YSVLTPQTAI ELSWRAFGGTSQAH LDGVTGSLLLDGN RYTIIASSSEI AFFVGQVGGGGIDRGRFSRFSGAFELHPD KVNVKDSNT TWKYKVTGSHE GTVKLSEGVLTFEND
 QLDVVRSQUGFEVRTRFGQRDEGVFPRFEGRIEVGSD


A $\square \mathrm{DPDQSRFGFE} \mathrm{\square RTRFGMK} \mathrm{\prod EG} \mathrm{\square FPRFRGELTESAD}$ $K \Pi N D Q A S N$ QQWAKKVIAGGHKGTLAFSKGEFIVYK NWDVDYDTSEIRFTGMYDG AEFSGTFDDWSADVEFHPE KAHTEVV FGDSTDDPMAKKATSHLSMDAS
 KFEMLAAQSNDDWVGKKV'GAHNGTIGIKEGEIILNDD NFKIVSSNSNVEWTGRHNGT DGMKDGFTLVGGKDKEGYV AASTLGFTARYQGEEIHGRFPGFSARIGFDPA NWED TDDSKVYFSVTTSK ETVNFVNNVVSGQWQLDND
 YRVDTEKSLLEWIGRNMGY SVVSGSFGEWDAVISGEE QY ILDQNASAME WKGYLKDGSGNNGTVNVA GKLFVTEP EWQVEEG SSIGLVVTQFG SEVEGSFADWTAAMSNDDS EWQVEEGGSILVFATKYDG SEVEGGSADWAAASFDAD

 TKKGGTYRQLSGTLTFDPT
 SKVYWSVT TSKETVNFVDPSVKGTWKVN


## UniRef90 UPI00029A3A51 UniRef90 ${ }^{-}$A3UBK7

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UR74
UniRef90-U2AWB8 UniRef90-A0AO59E923 UniRef90-E4TYF2
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UniRef90-A2TNB7 UniRef90_A2TNR7
UniRef90 B5FEM8 UniRef90 ${ }^{-}$FolXX8 UniRef90-UPI0002557B78 UniRef90-A5FA81 UniRef90_UPIO0047C2CDA UniRef90 W4CWY8 UniRef90-X8ARC3 UniRef90_UPIOOO40044E9 UniRef90-4L6Y4 UniRef90-B7WSJ66
UniRef90 G5Q2J3 UniRef90-E1IDI2 UniRef90_H1HAB1 UniRef90-13Z9P1 UniRef90-ABTOA1 UniRef90-A0A024FH68 UniRef90_UP10002378747 UniRef90_O6ANQ7 UniRef90_UP10003B4DD6A UniRef90 UPI0003B48D15 UniReffo-V6SET8 UniRef90 E1W $\times 84$ UniRef90-M7X824 UniRet90-A6E3V6 UniRef90 E1Y932 UniRef90-UPI00035ECF1F UniRef90_V6S757 UniRef90_UP100046A7EDB UniRef90-UPIOOO4660C05
UniRef90-UPIOOO406D64D UniRef90-UP100047C839E UniRef90-E4U715 UniRet90-UPIOOO46F73A3 UniRef90 U3CGM4 UniRef90-A3XC59
UniRef90 D0LIU4 UniRef90-UPIO0039FD969 UniRet90_B8DR93
UniRef90_UPI000373C81E

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\frac{1}{4}
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,
 GTIQSGTFIIDMTTIESTDNNLDAHLRGTDFFNVQKYPNA GKDASGTEVVVEPASAKTGDKYGDAHYRGADFFNVQKYPNA
 NELVGGSFVVDMNTLTVTDEDMDEHLKSDDFFAVKKFPTA GKLAGGEFVLDMNSHAVGKEDLEAHLKGTDFFNVKEFPTA LARSEADUTLDARRARTGLVFATEALKSPGILDAARHPDA QLIGGEFTIDMTTISSTDGKLDGHLKSADFFGVENFPTA



 GAHSKVDITMFPASVGTGEGRVDAFLKSDAVFDVANSRED | PENASFNVRIAANTFKTNNNSRDKDMKSDKYFWVEKYPDV |
| :--- |
| K LKGGSFVVDMNS | K LKG GSFVVDMNS $\square$ AVGKEK LEGHLKADDFFGVDKFGTS

GRQ QVRFRDDAAQVEDGKDRYTAWMRGEDFFNVAQYPVV NEGINGRUVLRVNS:KTGDNLRDKHLQSDNWLDSEKYPFI KELVGGSFVVGMNSLTVTDDNLDGHLKSEDFFDKKFPVA ALDSRVLVTVRTATADAGKKLKNDEHMQGAEWFDTASASFPKA ELLKGGNFTVDMTTVNTLDNKLDVHLKDGDFFAVDKFPTS



## $k$

 VGQSKVDLYVPVFSFDSKNANRDSNMQ
##  <br> N

## .






UniRef90 UPI00029A3A51
UniRef90- A3UBK7
UniRef90_UPI00037A804A
UniRef90_UPIO0037B2473 UniRef90- UPIO00409ABEA
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UniRef90_UPIooo37FBF63
UniRef90-UPI0003F7B8EE
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TN D DDD A A
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VTFVLRAEAPKP
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VDELSVVQUK
VTITVDAWLTAP
FELSVDV AKAVQPV
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FELDFN:TA


1 ELSF
VDVPVELEAVRa
I SLELFVTAAK
1 DVQFKLVAMK

VKFD
I) DGKVF LVG

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FELAVSLK
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FVGQKLVGQA
VKVKFRA
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VNTTRTGGAKAGH SDT DEVTRWRGDAT DD DD
TLS I T V Q Q F G S A V Q G Q F G Q WQ A D I A F D P E
VINKRSSTLEWKGGKFVNNNHNGNDKIKGGNIYLQKD WHLVADRSTITFK TKNMGLLTVKGEFTNFGGYGELADH K WT VNDQSKVYFSVT MSKETVNFEMDGDTGSWDVN YAVVTDGDEVKWEGKTYSDGKHTGADQVTEGQLMMEG WT LDPSRTGVA GAARM NVDLTTSMMTWKGTKPTGAH NGTVALKSGGLVVENG EWMLDPARSQLAFVSTKAEDTAEVNRFTEMSGSVD EWEVEEG TLSDTUSQLG SPVTGEFADWTAAIAFEDP VTYQLDATATTLKWKGNYADDSHSHNTVKISEGSVNYKGE TLGPNQTSAGFTFFE LDPAERKVTSGEVEGEVQDES YTLDPK DSNVTFAT 1 KKQFVVEPAS $\square K P L S G G L T$
WT LDASRTGVTGRAAKMG HRLTDAMKRWTATVQWAGD V DVKNSVFQWTGKKVT GQHTGKDFLKS GSVEVEKE QWTL GAADGELVLKTDKTGGHRDT $\square G F T D W T G T V T V D D D$ NWTLDPDASVLTYQSVKKNTIVETNKDRNITGTLS
 $R \| D T G K S \square 1 N W Q G S D L N L N T H N$
VRDDFDPATTKVDFTLADV LHTVHGTFKLKSGSIMFDPA
 DKKASVVTVTMHH P L H T WD GVSHDIN GVI
 WQLNAANSNVSF $\square$ V VK K GDVAEVHKFK S LE GKL S

SVVKAS GT STLHMTTFDATAQLENRDN H T DVGGRAA RTG HRLR $\square$ RA M R TWS A S V T L LD L V $F R I V P E Q S E A R Y R D R E L G R S D P N D A V G A D E G R I V F M A D$ Y QL RE QE SVA E WK G Y L R T G Y FNE G S I GVRS ES L TVVS D Q WS LD D K Q S S V N F V S VK K D S VG EVVH QF K Q L S G Ni A V D WTV A DGSEAGYRVDEVVQDNTVVGRTSEVVTGQVAVA D R WTAQPG SYA GYRVDEVVENATATGRTEQVEAEVVMLD D
 YRID A S Q S SAS Y QVRENK IVDAVGVTKAIAGELLIDDA D K A K S TVTYAMKHPMHDWEGVSRDVNAALVIDDAT

 $\square N L K S N K E E S T L S Y T A N H S \quad L H D W T G V N S V P D C D I V Y D E S$

H T GVT GRAARTG HRDTDEMQRWSASVTW R R D Q WS LDKS QSELYFTF IKAAQ $\square G T V G H F E S F D A N V T D D$ I D P THSSHAEF GVHVLDWF GKVVGRDDADH GRVRDDA H WMLD QK NSDFSFSSIKKS QVLENHSFNRFSGSID

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 NHTSVGFTGDEVLPAERTSTTTEVTGGQAEISSD



WVIVP NHTQQAGY FRE ILP GQEKTTS GRADNSTEENDD NWEI NPNDTSVGFTFSEILPGDERVT SGSTGYVTGHAK
 WK V V N H S S V G F TF Y E M N E K K Y T S G G S T R Y V V E G TVVKVE D

KNATSAGFTFSELGDERVT
S G S TP AVT GEMT IEA H T F S G T S N Y LT G K $\square D$
 WQLDN ADS KVVSFVSVKK K GD】AEVHEFN QVS GTLL
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 S DF




 AMNID EISSNDDLA GDQEMQLK LIDNHLRSPDFFDTEN HPSA V L T ${ }_{\mathrm{G}}^{\mathrm{G}}$
 VF VF D IT ALLK ED ME ESNENY GKLWGHLQSDDFF DAANYP QA


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 VL
$T$ TEAGSV DVVI A I G S L S L G
${ }^{K}{ }^{\text {E }}{ }^{T}$
 S G S ! FEKNGGEFEIIDMNS I D QYNEMLITH LKKSEDFFNVKKHS DA




## 


$\Omega$
$\square$ GSATEATLL
 GAVTAATVTVDMASVATDQPPRDRYFRTSAL ATDVFPTA

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## 


GO


$D \vee A G$
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DNKLLVSTA KP TV T NAADFA LDAGVTAVANLPS TSFA
 Q PGGSWR LDADTVVRHSDFGVRRYSMLMGAMQVADE KQQK FKGEFVID
$G A D R V A G T A K V R Q S D F G D Q P \square R D A G G T M R \square K D L$ DD $\quad V I$ GGDDPI NRLDYNVETPDMLA AAKVAED EHRF $Q V V T L S P L V V N A A D F G L A P G V A$



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VPLSFSATFSR
IT TLELDETFE
VAVDFKVV

VNVGFDISAT

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i RIDATLVG
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I KLMVDLKASKa

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GEVNVRLNLTK
VPLSFNLLFDK
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VELDRATLPRP
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QTBSIKANLKKK
VQMSis
VKMEFDD
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GEVNLRI
VPVSFVLTLEK
VTINFNLTL

VDIHEKLEGK
GTLDLLLVF
VPV VDLSF

GFVEFSLVLARA
IDVGMKLSGSK

| $V L L T L D L V A T A V A$ |
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| $F$ |

FKLSFS
TVI EL
$\checkmark$ PVTFNLVF
LKMKFHLSF
VRVEF
VRVAVDVTHTK
VPVTFRLRF
VPVSFNTTFTK
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QK: E: NA

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IKVETSI
VTVAVDVEL
VSLSFTAV
$\checkmark$ PVNFVLTFV


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FK LLEGKTEEVT LIK


SASANENQE
WLVSNQGSR $\square \mathrm{NF} \square \mathrm{S} \square \mathrm{KKGD} \square \mathrm{AEVHHFTQVSGQ} \mathrm{S}$ WT!IPNATSVGYTFHELGESRSTSGTTHVTGHGEVTVED
WT LDPERSAVTY四TKSTNPENNHFKEMRGQ DD
GHRLT $\square E M T E W S A Q V R W G S E$
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GHSLT IGGDAWRADI AF DGD
NWQVNAGHSN
NEFEGKSNSLNGLID FVLNPQGSRLYFVS $\square K K$ KHLVEAHTFNNDSGSITT WQLDNSSSELNFISTKNEHI AELHQFKQLSGNLS
 NWY LD NESSRLSFVTTKNANVSEVQRFLVLHGKVD
WTLQPEMSALNFQSVKKQTVVESSSFATLEGTDAANAD
T GVGYTFDELGGDARNTSG[LTRDVTGGVSVVD WT LSPTDSNINFMSVKNAAVTEVHQFRNVSGSVTDNGD EWTVTTNSTSAGFTFDEVGERTSTSGSTQDVSGGVVDEN
 WRD TDGSEAGYRVEEVLFTTAAGRTSEVSGSMTIADD

HVTGKSNAVVANAHFSDD K WY LD DESSRLSF $\square$ STKN LDDTSEVHRF LTTLHGTVS

WY H DKAHSNVEWETQYKEFSLLTGRFDSFFMTSNFDEN $\square R Y V V A P A G N E A R Y R V R E A G F D L P N D A D H D D T G R L V V E S D$
 WS $\square$ D GETSALHFLSTKNAQVTEVHKFDSFDGTLSDG WQVDNSHSRVNFVSVKNNA $\square$ AENHYFK DVS GSVD WEFGP GNGTVTVHTDVTGGHRLT DDMEQWSAELTVAD K F F S S T P A E N $\square E$ A N N Y K S $\square$ S T L D D

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jnet
conf
sol25
sol5
sol0
jhmm
jpssm

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm




[^1]


[^0]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

