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$M$
MDVS TPCTK ${ }^{10}$ VOTRYDE 20 NPEYQRF ${ }^{30}$
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HNI QVSVRTQFLPDQSDGENGYVFAYTITMNLS HN QVSVRTQFLPDQSDGENGRYVFAYTVTVRSG



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TVAAQLISRHWVI QRTVQLLDRRSWQ DRGVQLRSRHWQ

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| $D$ | $W$ | $T$ |  |  |  |  |  |
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$\begin{array}{lll}G E T & V & L \\ N & R & R \\ N & H & W \\ L & L & L\end{array}$

| $K$ | $E$ | $R$ | $V$ | $Q$ | $L$ | $L$ | $S$ | $R$ | $H$ | $W$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $K$ | $T$ | $V$ | $Q$ | $L$ | $L$ | $R$ | $R$ | $W$ | $R$ |  |


| $P$ | $K$ | $T$ | $V$ | $Q$ | $L$ | $L$ | $N$ | $R$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $W$ | $W$ | $R$ |  |  |  |  |  |  |  |
|  | $K$ | $A$ | $V$ | $K$ | $L$ | $V$ | $S$ | $R$ | $H$ |
| $W$ | $R$ |  |  |  |  |  |  |  |  |

$\begin{array}{lllllllll}T & K & A & V & K & L & V & S & R \\ G & H & W R & 1 \\ G & E & S & V & Q & L & Q & D & R \\ Y & W & R\end{array}$
$\begin{array}{llllllllll}E & V & S & A & Q & L & L & S & R & H \\ W & W \\ E & K & T & V & Q & L & L & N & R & Y \\ W & W \\ P & E & R & V & Q & L & R & S & R & Y \\ W & R\end{array}$
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 RETVQLRSRYWHI
K ETVVQLKNRYWK
SLPARLLSRHWI E K T V Q L T A R H WK I

| $R$ | $V$ | $A$ | $K$ | $L$ | $L$ | $T$ | $R$ | $H$ | $W$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $V$ | $P$ | $A$ | $Q$ | $L$ | $R$ | $S$ | $R$ | $H$ |
| $W$ |  |  |  |  |  |  |  |  |  |

$\begin{array}{lllllllll}T & V & P & A & Q & L & R & R & H \\ S & W & W & V & Q & L & A & R & R \\ W\end{array}$
$\begin{array}{lllllll}S & N & K & V & Q & L & I \\ S & R & H & W \\ E & H & P & V & Q & L & L \\ R & R & H & W\end{array}$
E VAA A L Q S R H WI I
$D V P \vee K L V R Y W H$
$P$ Q A V Q L L R R Y W Q I
R E TVQLLVNRYWHI
T E S A K L I S R H W L
$\begin{array}{ll}A R A A Q L \\ M N V & L\end{array}$

E ETVRLVARHWR
D E A A R L L D R H WVV
R V A A R L I S R H WII

| $D$ | $E$ | $A$ | $A$ | $Q$ | $L$ | $L$ | $R$ | $H$ | $W$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :--- | :--- | :--- | :--- |
| $T$ |  |  |  |  |  |  |  |  |  |
| $I$ | $A$ | $A$ | $K$ | $L$ | $I$ | $S$ | $R$ | $H$ | $W$ |

E $\|$ A A K L L S R H WV I
E A AVQLLNRHWUI
$\begin{array}{llllllllllll}A & E & R & V & L & L & R & H & W Q \\ S \\ S & P & A & K & L & \text { T } & R & H & W\end{array}$
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| UniRef90-I6ZID7 | $\checkmark \mathrm{P}$ |
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 E AVT D GI Q V QVVEA F Y L D S H S VP E E E R Y V F T Y R I CLL K N L S F T A V ETPDYT FI RIATRFLDEFSEPERDRYVFAYTIRRANNG ATTRDI IVHVAVTFLPEQSEPERGRWFWAYHIRRIENQG


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M
 MEVSHPCVKKCQVTKYVPE NTIDVSVTTRYLAEHS M S D

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 | $M$ | $K$ | $D$ | $N$ | $D$ | $D$ | $D$ | $V$ | $K$ | $T$ | $Q$ | $Y$ |
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TVTRSI QVTVQPSFVVE
D GNSHAVGVEVQAHYVE
$D A T T L G V R V Q V R S V Y / E G$
SHY
EEKKYEI EVSVRTVYLP
MTDANHQIRVSVETEYLADQS
YAFDIDVATRYLD
D N P H
Y HI TV $\mathrm{Q} A \mathrm{~A} \mathrm{~V} M \mathrm{Y}$ QE
MS S Q A L
MANEKYOVDVSVVTRYI D
MANEKYQVDVQVNATYLPDQSLDPAHNQYVFAYTVTLLNRGG








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| UniRef90-H1YIS8 | A P |
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| UniRef90_Q2BK12 | QPNA |
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| UniRef90_UPI0003620B9F | S |
| UniRef90-A5V5J7 | GP A V |
| UniRef90-D5BZ93 |  |
| UniRef90-UPI0004780339 | QP N A |
| UniRef90-L1LVK7 |  |
| UniRef90-UPI00036A0B51 | TPRT |
| UniRef90_F5ZEK1 | VP N $\square$ |
| UniRef90_V4JRY8 |  |
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| UniRef90-UPI00047691EA | M PRT |
| UniRef90-C6XBP8 | T PR/V |
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| UniRef90-A0A024ICP8 | A |
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| UniRef90_UPI00036E7042 | V P NI |
| UniRef90-UPI00040A9921 | V P Y L |
| UniRef90-Q2N999 | APET |
| UniRef90-Q0F3N2 |  |
| UniRef90-TOHGD2 | APAT |
| UniRef90-E3BLY4 | P N $\square$ |
| UniRef90-I0QZO7 |  |
| UniRef90-F9ZTC9 |  |
| UniRef90-M7PDI4 | V P R T |
| UniRef90-B8JAJ1 |  |
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| UniRef90-R9PRR6 | LP N |
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| UniRef90-UPI00037B54F5 |  |
| UniRef90-G4SZ35 | 1 P R T |
| UniRef90-D3RVQ9 | STRLL |
| UniRef90-K7ADP8 | V P N V |
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| UniRef90-B0TV51 |  |
| UniRef90-F4CEQ1 | P D H |
| UniRef90-K5XQE3 | S PH |
| UniRef90-F3KEB4 | P P HT |
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| UniRef90_C7JCD7 | S P |
| UniRef90_UPI00046978AD | V P |
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| UniRef90_UPI00036AB251 | H P |







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UniRef90-IOHKV1
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UniRef90_A4BMR8

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NVPA R|LI A R H W W LSTIQLLSRHWQI ID YKGKINEIVGAGVIGEQPVIKPGEV DSTVQLLKRSWKI I DSKGVVNEVSGSGVAGSQPVLKPGAF DA WAKLKSRHWDI IDSDGHREDVYGPGVVGEEPELEPGDT

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$\begin{array}{llllllll}D & G & D \\ A & L & L & M & R & H & W \\ L & Q & L & L \\ R & R & R & Y & W & L & L\end{array}$

| $T$ |  |
| :--- | :--- |
| $F$ | $S$ |
| $F$ |  |
| $F$ |  |
| $F$ |  |
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| $D$ | $V$ | $A$ | $A$ | $Q$ | $L$ | $V$ | $A$ | $R$ | $H$ | $W$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $V$ | $P$ | $G$ | $Q$ | $L$ | $I$ | $G$ | $R$ | $H$ | $W$ | $I$ |
| $D$ | $I$ | $T$ | $A$ | $Q$ | $L$ |  | $A$ | $R$ | $H$ | $W$ |  |



| $D$ | $S$ | $S$ | $Q$ | $L$ | $M$ | $S$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| G | Y | $W$ | $W$ | $N$ |  |  |  |
| $T$ | $L$ | $K$ | $N$ | $R$ | $F$ | $W$ | $E$ |


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| $D$ | $E$ | $T$ | $V$ | $Q$ | $L$ | $R$ | $E$ | $R$ | $H$ | $W$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $S$ | $P$ | $V$ | $Q$ | $L$ | $K$ | $N$ | $R$ | $H$ | $W$ |
| $A$ | $I$ |  |  |  |  |  |  |  |  |  |
| $A$ | $H$ | $S$ | $I$ | $Q$ | $L$ | $L$ | $A$ | $R$ | $H$ | $W$ |


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



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UniRef90-O6MK56 UniRef90-H2CC2 UniRef90-UPIO0037AC407 UniRef90-L8JMR7 UniRef90-G21J80 UniRef90-G8PTK7 Uniinefoo-art UniRef90_V4NMG6 UniRef90-R8AM29 UniRef90-FEDO27 UniRef90-E6V5E2 UniRef90-A0A014MDT8 UniRef90_YOKKE9 UniRef90-V4YQKO UniRef90-B1Y7K6 UniRef90-UPI00046F2B9B UniRef90-K6Y4G3 UniRef90-15BU39 UniRef90-TONXV7 UniRef90-G4CPA8
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UniRef90_T2M2H1 UniRef90-A4A6V4
UniRef90-UPIOOO36DF393 UniRef90-M1CJ78 UniRef90_H6L712 UniRef90-A1AWJ3 UniRef90 QOBYUO UniRef90-M7NAV7 UniRef90-10 HKV1 UniRef90-T2L9U9 UniRef90_UPIIO003B7B9A6 UniRef90- J9Y $\times$ M3
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 YTYTSGTVMETPVGTMQGSYRMIDDEGIVYFDVPIPVVFTLA FEFSSTCPLSTQNGRMEGDFEMGHVDSRAFNVADAPFSLS
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FVYTSFCPLNTSWGTMEGSYAMRDSEGNQFEAPI ARFILA
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FQYSSHVSLQAPSGHMWGTFRMEREDGYTFDCRIPPFSLED
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$F E Y T S G A Q L R T P A G M M S G H Y F F V A V D G T R F D A A I S P F Q L Q$
FEYTSWTRLATPHGRMRGTFFCMTEDAHSFEAPIPVFELA

YQYTSGA LDTPVGTMQGHYEFKGADNDDFKVPIDVFRLA

## H

F


 F E Y T S GA Y L S T P S G M M H G E Y Q FM D E DA Q V F Y V S I P M F S L D


 Y T Y T S G TVIE T PVVGVMQGHYSMQDDDETPFT DDI AP FRRLA





## F


FSYOSGAPLTAPSGMMRG

$F$ T Y T S S A M L H S Y D S WC P L P S P LGGSME GRYMLMVNETGEN F Y M A Q V P R F Q L E


F


## F




UniRef90 W8VPX3 UniRef90_UPIO0036071A5 UniRef90_UPI00041B01EF UniRef90_F0RB67 UniRef90 G2T6Y9 UniRef90-K2BG21 UniRef90-UPIO000EOE6D9 UniRef90-UPI00037BF043 UniRef90-LOA6S3 UniRef90-R7ZW51 UniRef90-G2PL64 UniRef90- 66 GN 45 UniRef90-UPIOOO3741E41 UniRef90-A4ATIO UniRef90_UPIO003F6E9E9 UniRef90 B7RVQ9 UniRef90_UPIOOO429F960 UniRef90-UPI0003F511E3 UniRef90-F3L077 UniRef90 ${ }^{-}$W4LYP6 UniRef90-UPIO0034C8F85 UniRef90_Q11WU7 UniRef90-T2KH79 UniRef90-ㄴAAH79 UniRef90_UPI00035FA0A8 UniRef90 A0LYD7 UniRef90-UPIO00469B147 UniRef90-E5SZS1 UniRef90-I3YSQ1 UniRef90_X1Y1U5 UniRef90-R4YSIO
UniRef90-G8X4M4
UniRef90-E1Z7Y8 UniRef90-UPIO003D264F7 UniRef90-C1E783 UniRef90--J9K293 UniRef90 R7QG52 UniRef90 ${ }^{-F 4 D B B O}$
UniRef90
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UniRef90_A9WAZO UniRef90_UPIOOO4293700 UniRef90-UPIOOO37B12A8
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UniRef90 N8GDP1 UniRef90-A6EPQ3 UniRef90-A6DGR4 , SIPVQVIARHWII TDAYKHVEEVRGLAVVGHQPLLEPGDS KDSVQLMSRHWE YDSLNNKEVVDGEGVIGKKPVLKPGET KDSVQLTSRHWEIYDSLNDLEIMDGEGVVGKKPVLNPGQS ARTVQLMRRHWIVTDAFGRVQEVEGEGVVGEQPILAPGAQ NNDVQLLNRYWRITDMTGHVEEIRGPGVIGLQPLIKPQKK DNPLQLRNRYWLITDGNGEQQEVSGAGVIGEEPVIPPSES
$P A T V Q L M S R K W E I N D A G M P I T V V E G G V I G Q Q P L E P G A T$ EESYQLDEREWQYYDNGQVTQVQGEGVVGEQPLLRPGGV KDTVQLTARHWDVFDALKDMETI DGEGVIGRKPVIKPGKS ETGVQLLSRRWVVTDGNEKQQQIEGDGVIGVQPVIKSHSS

 DMPVQLLSRHWLITDADDDVQEVRGEGVVGEQPIIQPGGS QHTHQLLRRKWEI FDAAESPKLVEGDGVVGQQPVLEPGES NVPARLLGRRWLITDANGKTIEVVGEGVVGEHPYLRPGEA DTPAQLISRHWII QDAHGRTEHVRGPGVVGAQPRLEPGQS PVTAQLVARHWR TDGHEHTQEVRGLAVVGHQPLLKPGET
$D Q T W Q L E R H W D I D A G G R E T V V D G G V V G E Q P V I P R G A A$ KETVQLVARHWII RDALSTVETVSGEGVVGFKPILKPGET NQTVQLMRRHWH| YDSKGTHQEVEGEGVVGQQPLLKSGQS NOSVQLQARFWRI GETVQLDARYWK HHPVQLRERHWR KDQVQL LS RHWD


N $\begin{array}{llllll}P & G & P & V & Q & L \\ P & L & H & R & H & W \\ H & R & W\end{array}$ | $P$ | $F$ | $S$ | $V$ | $L$ |
| :--- | :--- | :--- | :--- | :--- |
| $R$ | $L$ | $L$ | $R$ | $R$ | $D \quad \square T Q Q L L R R R W E$

$\begin{array}{llllll}K & D & L & V & L & E \\ T & Q & T & R & A & W \\ L & L & G & R & W & L\end{array}$
$\begin{array}{lll}D & E & S \\ P & Q & L \\ Q & R & E \\ R & H & W R \\ R & R & W\end{array}$
$\begin{array}{llll}P & V & T & R \\ K & L & T & H \\ V & Y & W & W\end{array}$
$\begin{array}{lllll}K & E & N V & L & L \\ K & R & Y & W L \\ K & C & L & L & D \\ R & Y & W R\end{array}$
D D S WK L L S R H WT I
$K D T V Q L T A R H W Q I$
$\begin{array}{lll}\text { A R S S Q L K S R H WV } \\ \text { N A S V Q } & \text { I T R H W D }\end{array}$

S E N L Q L L S R S WT $\begin{array}{llllllll}D & E & V & Q & L & L & S & R \\ \text { D } & \text { W } & \text { W } & \text { R } \\ \text { D } & H & W & R\end{array}$ DAACQLDSRYWRI ENACQLDSRYWK
KDSVQLISRHWK
DQTWQLARHWD
EQAAQLRTRRWLI
 QNPVQLLSRYWQI YDSSSTVEETEGEGVVGQQPVLNSMEVV
$K D V V Q L S R H W K L E S T R P Q Y N G D G V G K K P V L K P G D T$ DTPAQLVAROW pNEVQLLRRBWI DSSVKLLSRSWL HHTLTLKRRNWQI


## LT <br> -

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S E
E D
K Viva K K R Y WA
TETVVQLRNRMWV

## UniRef90 W8VPX3 UniRef90-UPI00036071A5 UniRef90_UPI00041B01EF UniRef90_F0RB67 <br> UniRef90_G2T6Y9 UniRef90_K2BG2 UniRef90_UPI0000E0E6D9 UniRef90- LOA6S3

 UniRef90-R7ZW51 UniRef90 G2PL64 UniRef90 S6GN45 UniRef90_UPI0003741E41 UniRef90_A4ATIO UniRef90_UPI0003F6E9E9 UniRef90 B7RVQ9 UniRef90_UPI000429F960 UniRef90_UPI0003F511E3 UniRef90 F3L077 UniRef90 ${ }^{-}$W4LYP6 UniRef90_UPI00034C8F85 UniRef90_Q1IWU7 UniRef90_T2KH79 UniRef90_14AH79 UniRef90_UPI00035FA0A8UniRef90 A0LYD7
UniRef90-UPI000469B147
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UniRef90-I3YSQ1
UniRef90 X1Y1U5
UniRef90_R4YSIO
UniRef90_G8X4M4
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UniRef90_D0HC52
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UniRef90_A8J9H9





H Q Y VS GC NL R S GMGKMK GSYFMERQDGK LLVIITI P EF QL I
FEYNSFTSSLSTAPGHMAGTYTFRDAWGERFRVVPIAAAA L T

H TYS S GCLLA S PV GAMRGHYRMVNTNAEEFEVEI PT FKFA


H TYQS GCLL L T A PI GSMSGYYNMINTTTNEFQVRIPPFRLA
FRYTS GA TLLA T P V G F M K G N Y F M MV P E E L L P N F E E V
H TYVV G C N L L K S G L G K M K G S Y T M E E K M D D G S L V V E V
F Q Y T S S TM M E T PVG S M Q G S Y QLLA D D GVVF E AP I P P F R L A
Y DYTS GSNFETPIGFMEGYYTFEHEHGDTKKVTIPSTRLA
HEYTSFCPDGTPSGSMRGTYQMVRDDGSEFDAVVGVVSGLM

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



FSYTSHAVLDMPVGVMQGAYTECDATTRTFDIAIAPBRLAA

H S Y T S G CLL F S P F G A M K G H Y N MV N A T T R K F R V S I P D




FEYASACPDLRTRVGTMEGTYTH

FEYNSACPVQSVVGNMKGKYHFCKGDTGKFSVDIATMYLK

Y

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| UniRef90-G2T6Y9 | S |
| UniRef90-K2BG21 | $A P$ |
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| UniRef90_G2PL64 | A |
| UniRef90-S6GN45 | A |
| UniRef90_UPI0003741E41 | GPRT |
| UniRef90-A4ATIO | A |
| UniRef90-UPI0003F6E9E9 |  |
| UniRef90-B7RVQ9 | T |
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| UniRef90-UPI0003F511E3 | \P R T |
| UniRef90-F3L077 |  |
| UniRef90-W4LYP6 | A |
| UniRef90-UPI00034C8F85 | Q T R A |
| UniRef90-Q1IWU7 |  |
| UniRef90-T2KH79 | A |
| UniRef90-14AH79 | D |
| UniRef90-UPI00035FA0A8 | R P |
| UniRef90-A0LYD7 | A P Y T |
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| UniRef90-X1Y1U5 |  |
| UniRef90-R4YSIO | VP |
| UniRef90-G8X4M4 | A P |
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| UniRef90-G2EBV1 |  |
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| UniRef90-U4TKE1 | QS HLL |
| UniRef90-H5TDC9 | V |
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K P Y S WY Y K VS $\quad$ Q N LS

 A T T $N$ N GVVMV



 F E A STH H I Y I A DYYP FWL E E Y S F P R R N DF S W G Y H V R M N N N N D T V T R G V R I M T V G F Y L P D P S S P S D G R F M F G Y N V T I T N
 T D DVVLVEAT GRYLP QHSDPSARRFRYTYRVRVLNEG VT E N N L E V T
 A S T G S I I H H V K V A T A F N P E H S T L LH P P L L F F H T Y H F K T M S H NVVHI A I Y P S WLE E Y S Y P R R N I Y S WTYHVVCIENHN VTK GI CVVEATS QHV DNSSADQNLYRFAYRI TITNNN





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UniRef90
BoG139 UniRef90-UP10001FE58DC UniRef90-F6HYX0


YVYDSFVTVQDTPAVMQGHYGLQDAWGAAGRATISPFVLD YTYSSGCVLNSSMGAMQGFYEVLNLANQTFNVEIPNFKLV
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YTYSSGCVLTSTSGAMHGYYNVIRENQEMITVEEVFFKLVV YSWVSTTHFATPTGYMSGYFTMEKNSGEMFDVTCPMFTMK FNYFSNVSLRSGVGAMQGNY LLMNLDSKTFEVEITPKFSLI FVYESCTPLPSSSGSIEGSFMFVDPKGSRFRVPAARFPLQ FEYTSASMIKTEVGTMEGYYEFEFADGQFHREQTPVFNLS FQYSSHVSLQSSSGHMWGDFRLEQEDGKQFDARIPAFALD YTYDSFVTLDAAPGVMGGHYVMRDAWGKAAQVPVPPFRLD YEYNSGSQISTPWGSIEGAYEFEDSTGERFTIGVP YQYSSHVVLHAGSGYMWGSYRMERRDGTSFNCKIPKFYRE FVYCSCTNQSTTHGSMEGRFQFVRPEGATFDVICPAFRLD YQYNSHVSLKQTNGLMWGTFQMEREDGFLFDIRIPPFSLE
FSWVSCTSLSTTFGNMKGHFVMRNHTGDMTEVHCPVFNMC
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F

## F


$F V Y$ Q S C S S Q Q D S P G S I E G S F T F V D P K G SPFEAVV S R F P L V FHYKSSSGMATPYGTMHGSYQFVDEDGDLVEATIAPBGLVN
 $F V Y$ E S C S T Q N T L S G S L E G D F T F V R Q E G P E F CVVR V A P F P M Q FVY QSCTP LS GAPGSIEGSFTFVKPEGRHFDAKVAPFILE FVYESCSSLYSSVGSLEGSFTFVPPEGSPFEVQVARFPLQ F E Y A S GV Dil D A P R G S V T G C L H A QD D D G D T F DA L V S K F A L L


## F





F




F Q Y Y S A T D LS T P S GTMMK G S Y Q M V N K P N V P F D A V I P T V A L




 F T Y S S L C P L S




$F E Y V S G T D L D T P A G L Q S G K L E D V D K T G R T F M A A V A P A A M M$ F S WTS Y T T FP T TYYGNMRGHFTMKN
 FAY Q S CTHQQK E A A G SME G S F F R F V E G S G R E F D V A A CA Q F N L S



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| UniRef90-H1H331 | A P F V |
| UniRef90_UPI00028A2266 | A P Y |
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| UniRef90-F6HYW9 | C P |
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1
S VT T N G $\square$ R $\stackrel{10}{\square}$ F A E S F Y H GF $^{20}$
D DEHWW
30 RIEFKNVG AVTNGVKVRASALVIPELDDLQDDKYLFAYQ|SMMMDE
 TTENI RVTVIPFYMGMREAQNSHVYWWRYCFHLENLD
 N R A T QE F L W G Y Y F C A $\square$ T X D $\square$ T V S VS T L S L P E F S S LTH P P H Y F F M Y Q I R I E ML

S L P A D K P HAFVVYF I T I R NES
 IA I E A T P K Y E K K Q RMQGAQYVYSYHITMNQS

T D D VE $\square E$ A T S QF L P T Q S E P
E QH QL QL

 S S T T G PLLTVEVVS SA Y N S E N S DP P M R K H C F Q Y T V V R I T N N S

 D AT


## F D A N TYG IT VS VR WLF

 TENI EV TVMTEY LGANSQLSHNKTHYSYYI KMSMA E VT N GVVVRASSVFMPEVSNHLDNPPVYSYACSI RMRH VT N NV R V S V I P I Y L G S F S R N D K S R H Y WQ Y H I T L E N L S

 P PGKP HAFVYF $T T \square R N \square S$ S S Y R VLVGA TVE Y V P S R S DA DLLR HA F QY DV H I HN GR S S Y R V L V GA TVVE Y V P S R S D A DLL R R H A F Q Y D V H I M N G R


 ATTVGVQVRASAVYLPNHPSG

FA Y S I
K Y A HA Y T I T I M N A S $R$ V V H MPR L L E A P P D R P HP F VY F I T R N N S


 S S Y Q WS Y R V T FV N Q G
 TNGI WVKGSAVYVPE ERGSGDYSFFYRISMWMDK
 S C T T H D V Q V T L L P FF DA D N S N S A S ETSKNAVRVGVSTVYMPF E S VS Q GIIKVE S Y S E Y L G E S $\square$ IP E LG R D W Y Y K A I Q YF G R H S F S Y Y I K L T N L H HAF DY F I S I A NL S



 S A S M H G $\bigsqcup$ KVRASAVFAPENSAFADYRCRYSYYFSURLSLD
 T E Y V

QSEDAKAH
$N G \square V I S V N E L L N E K A V G D E$





F N S

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



 T D DVLVEATGRYLPQHSDPSARRFRYTYRVRVLNEG Q H L F $\square Y H V F I$ R VLG S TVTN GVV V R A S A A F V V P E F S N N N E T E K Y L F A Y S V R V S G V K S A|VTN GlV K V R A S A VF A P E H P H G V G R V

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UniRef90 W 6 KR 67 UniRef90- F1A4X9 UniRef90-J9HWM4 UniRef90-W4FTJ6 UniRef90-W6L8T0
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FKYESRTP\| ${ }^{90}$ LTRGSMYGSFO 100
110
120

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F QYHSHTITK $\square P N T Y M W G \square Y R F Q K P S G A T \square D V K \square P N \square A \square C$ FQYSSHVSLQASSWHM
HTYASRTSFATPEGLMSGFFTDTEDDGPSYKMKVPPFKDK FEFTSLAPLTSPHAVFYGSCRIRKERTESKD【KIPTFTMS YQYTSGAVIETPLGTMRGSLR
 FEYDSGTDLDTPSGLQRGMLEQERRHTPAEAMDWGPDRLC FEYHSGVELTTKEGRMSGSFQMANGDDELFDALVAPFAL FEYASGVDLETTTGSASGCLHMTRGG FEYTSTAPLSRPMGTTEMAARM
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$F$ EYCSCELRNDNGQMSGYFLMLNQNGTPYSA
FEFSSMMPLNAADAVFYGSCKIQEAGQKTVEDKDPTFSLS FEYQSDTTLPSPAGTMGGHFSFTPRDGAQFNARVPTFHLV
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FSYNSYHVTGDDAVAHGSFHGDDEQGRRVFTVLPPFAMQ LKYRGMFELPTETGAAARY
LKYRGMFEDPTETGUAAARY
YMYMSCVPEDRKYGRUEGHFNVVKDENAVVKVPDAPFWDE

FSYSSKTY LDSEQGKMGGFFTF DDEDGR乌FHVPVPTFELV FVYQSFSMLRPGGGTFEGALEFVEPAGPTFLVAVPRFRLR FTYYSYHVMLNRFGSALGKYEFEQEEGDEFEVNIPEDQLI
 YEYASCTGVDSDLGEVSGSFRFVAPKGPPFDVKVPNDKLI FVYESCTPLSSSSGSVEGSFTFV
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YEYSEFHTMRTTTGNMRGEILLRDETDETIKVKTP
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$F Q F T G H V S L A T D R G L M G G F T F V P V V A P L V D V P G E L E$ FQFTGHVSLATDRGLMGGSFTFVPVVGPPLLVDVPTFELE FGYEGQTVIDTKKGTIYGSFEVLKSHSSLFVANMAPLGLR
 FSYNSFHVVREPSATASGTFFGQTDHGQPVYVRVPEFEMT FCYSSYH LY Y RTTLAEGAYFGQDEGGRAIVVGVPPFRMV FTFHSGVRIPTTTGTFTGSDEDGTE
HVCAAGTSLQGRRGDMRGTYHMEKEVSRVFDDPTPPTRLS
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FEYTSFCVFQYPS
FVFETAVPVT
TTYQSCSPLSNFNDVMQGYFTMDDASGTSFNVPTSSFRDE FQYSSHVSLQASSGHMWGTFRFERPDGSHFDVRIPPFSLE FKFTSSTMLPQPNADFFGSLQUKDHRGREFMLPLPSFNLN FQYMSGAELSSPKGAMEGCFHMVDEDTES
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| UniRef90-D8UAK4 | WP |


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50
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$P Q S V I L R E R F L K V Y S L N N M N Q A$ HGHGVI G
DSSFQLDGRTWKI FDKDGRDVVVDPKGGVGHFPVIRPGEV DAPCQLKSRRWVIKNLSNFVEDVEGEGVVGEFPFLRC T ASCQLSTRHWRI RDERGEVEDVEGEGVVGEFPFLRC


AQLHTRHWVLRQADGGADQARGKGGRRDDKRIGQGEV HLTPKVYPR $\quad$ VEEVRGDGAV GHFPVI RPGEV


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 FEYMSGCEVRDEGG MEGSFYMKDDDPRRFKAEVNRFGLK

FVFSPDFS $\square$ AGPSSDAMATYGVEKEDGGMFTVKVPRVMLE FVYQS $\square S$ GRGSS $\square$ SFEGS $\square \mathrm{DFVAPTGEEFAVAVPRFPL}$ FEYMSGCEVRDEGGMEGSFYMKDDDPRRFKAEVNRFGLK FVYQSCTDGQ FQGKMSGSWQFDDASGDVFDAEVKSFPGQ FAFNGLQMLRLP ARDQLTLLVRDEAG

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