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 VDAATMQKLDAGFKKLQAATDXKSLLRKYLTKEVYDKLKD VRARRLYPPSADYPDL SKKHNHMAKVLTPAIYAKLRD KNNHNDYKMQFEEYPDLTVHNNHMAKALTKEIYNKLRD THNKWKLNYEEFPDLSQHNNHMAKALS LDIYKQLRD VDQATLDKLEAGFAKFQNATESKSLLKKYLTKEVFEBLKG VP OEVQPRPAEDESPALSGNNHMAKVLPELYAELRA VPQEVIDKMEAGYKKLQAAADCKSLLKKYLTKDVVDACKD KAKFPDYPDLSKHNNWMSKCLTPEIYEKLRD LQNSLKNYPDLSSHNNWMAKCLTQDIYGKLCT MNRNTLKKFKAE EEYPDLTKHNNHMAHCLSKDVFNKLRD MDPAVLAKLEDGWCS NCSDSKSLLKKYLTKEVLDDLKN THHTMK LKYDEYPDDSKHNNHMAKILTPAMYENLRS PYSHVEFKMNYEEFPDSAAHNNHMAKVLTLDMYKKLRD TNPEVLTKLEDGFRRLAT SNSQSLLKKYLTQAVFDKLKS VDQAVIDKLEAGFQKLQSSAECHSLLKKYLTRNVLDACKG NFPDLSKHNNHMAKCLTEKLYNELCN KKYANFPDLSKHNNHMAKCLTEKLYNELCN VDAAVLEKLETGAKKPELSKHNYMARCLADVAKLRD -

NE LQKTYP
PDFPDL
PNLKHNHMAKALT
PNYP
PNYPDLTVHNNWMSRCL
VDAARRNTDFPASSNYPDLRKHNNHMAKCL
EQSKLYPPSADYPDRRNNNC MANNL
KETLNKTDNAYKKLQGDSKCKSLLKKHLTKDVYAKLRD AAGAYKLFPASADYPDLSKHNNVMASNLTPQIYARLRD TIKKLSPE EEFPDLSQHNNHMAKVLTQDMYTKLRD ADTASELAKAGPNYPDLSKHNNWMSKCMTPAIYAKLKD ADTASELAKAGPNYPDLSKHNNWMSKCMTPAIYAKLKD ADPNVIAKIEESFHKDQEAKDCHSLLKKHDSKAI DDELKN EKAVAEDTNMPDLSKHNNWMSKCLTPAIYSKLKD AENERLNKQQSAEDEYPDLEHAHNHMAKVLTLDMYKRLRQ ANSHNCKMNYDEYPDLSLHNNHMASVLTGELYSKLRG

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## KSNFPNFPDLS <br> AGFPSFNE

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ADAATVKK DDEAF

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 K K T S F G S T L L DVI Q S G V






KKTKFGSTLDDCV
 RKTGMGATLVDVV KTTKGGVTLDEC
 KKTSFGSSLDDV KRTPSGFTLDNVI KTPPSGFTLDGA KKTQSGYTLDGC KKTQSGYTLDGC KKTQSGYTLDGC $K$
$K$
$K$
$K$

## -

01CB9AE4

PPI0001CB9AE4 UPI000161CF4E4 2ZCPO
J23 0002657 AFF $R C T P S G F T$
$H K T A M G A T$

 RSTNMGAT L LDDV | $K$ | $V$ | $P$ | $N$ | $G W T$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $D$ | $Q$ | $C$ |  |  |

 $\begin{array}{llllll}R & V & P & D & G & S \\ K & L & L & D & V \\ K & T & T & G & W T & L \\ D & Q & C\end{array}$
 $\begin{array}{lllllllll}K & T & T & K & S & G & Y & T & L \\ K & A & T & P & A & G & W & T & R \\ L & A \\ D & Q & C\end{array}$




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QUERY
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UniRef90_Q67ER6

F
FDP I I
DD Y H G GF K
$\begin{array}{llllllll}F & D & P & 1 & E & D & Y & H \\ F & D & P & \text { GF K }\end{array}$
FDPI I E DYHKGFK
F NPI I E EYHVGGF
F D PVI E E Y H NGFK $\begin{array}{llllllll}F & D & P & I & Q & D & R & H \\ G & G & Y & K \\ F & D & P & I & E & D & Y & H \\ G & G & F & K\end{array}$

F DPI I E DYHGGFK
F D P V I S D R G GY
F D P I I S D R H G GY K
$\begin{array}{lllll}\text { F D P } & \text { V I } & \text { E D Y HK GFK }\end{array}$
F D P I I E DYHKGFK
FDPI I NNYHGGF
$\begin{array}{llll}\text { F } & \text { D P } & \text { R I DRHS G Y K }\end{array}$
FDPI I DGRHGGY

F D PVI E Q R H N GYK | $F$ | $D$ | $P$ | $V$ | E Q R H N G Y K |
| :--- | :--- | :--- | :--- | :--- |
| $F$ | $D$ | $P$ | $V$ | I |
| E A R H N G Y K |  |  |  |  | FD P I I E DYHKGFK $\begin{array}{llllllllll}L & D & P & V & I & E & D & R & H & G \\ G & Y & K \\ L & D & P & V & I & S & D & R & H & G \\ G & Y & K \\ F & D & P & I & I & N & E & Y & H & G \\ G & F & K \\ F & D & P & V & I & E & D & Y & H & K \\ G & F & K\end{array}$ F D P V I E DYHKGF $\begin{array}{llll}\text { F D K } & \text { I } & \text { S R R H G G Y } \\ \text { F } & \text { S E R H G G Y }\end{array}$

$\frac{\mathrm{L}}{\mathrm{F}}$
D P V S DRHGGY FDPII QDRHGGY
FDPII S GRHGGY
FDP:I
FDPI S SGRHGGY DP II I DERFNGY FDKI I EDYHG FDPVI DERHGGY LDPII EDRHGGYK

\section*{L} $L$ $\frac{L}{F}$ $\frac{F}{\mathrm{~L}}$ | $L$ | $P$ | $Q$ |
| :---: | :---: | :--- |
| $F$ | $D$ | $D$ |
| $F$ | $D$ | $G G G Y$ |
| $E$ | $D$ | $Y$ | F D P V I E D RHGGYK F D P I D D Y H N GF K $F$ D $K$ | $F$ | $D$ | $P$ | $V$ | $E$ | $E$ | $R$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $D$ | $P$ | $V$ | $Q$ | $E$ | $R$ | $H$ |
| $N$ | $G$ | $Y$ | $N$ |  |  |  |  | $\begin{array}{lllllll}F & D & P & V & Q & D & Y \\ S & H G & H\end{array}$ $\begin{array}{llll:llllll}F & D & P & V & Q & E & R & H & N & G \\ F & D & P & D\end{array}$



 $\begin{array}{lllllllll}F & N & P & V & E & D & Y & H & G V \\ F & N & P & I & E & D & Y & H & K \\ G & F & K\end{array}$ F DPI I K DRHNGYD $F D K V I D D R H G G Y$ $\begin{array}{llll:lllll}F & D & P & V & K & D & R H & N & G \\ F & D & P & V & E & \text { E } \\ \text { F H K C F }\end{array}$ F DPDV I E Y HK CFK M D P V I D E R H N GY $F D A V I D E Y H G G Y K$ F N P V I E E Y H N G F K F DKII I S ERHGGY

| $F$ | $D$ | $K$ | $S$ | $E$ | $R$ | $H$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $Y$ |  |  |  |  |  |  |
| $F$ | $D$ | $P$ | $V$ | $E$ | $E$ | $Y$ | $H$ |
| $N$ | $G$ | $F$ |  |  |  |  |  | $F D P \mid \quad Q D Y H G$

FDPT DKRHNGY FDPT:DKRHNGY
 FYPVI KERHNGYD FYPVIKERHNGYD


F D P V I E K R H D GYR
FDPVI EKRHDGYR FDPVI EKRHDGYR FDPI I DKRHGGY FDII HDRHGGYK FDKVIEDYHNGYK

 FDPVI EKRHNGY



| UniRef90_A2Q010 | LDP\|V I EARHGGYK |
| :---: | :---: |
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| UniRef90_E6X299 | F D PI I E E Y H G |
| UniRef90_A9UQM6 | FDAVI E D Y H N G Y K |
| UniRef90-I0FXI8 | LD KI I E D Y H A P Y KL |
| UniRef90-I0FXI8 | L D K I I E D Y HAPYKL |
| UniRef90-I0FXI8 | L D K I I E D Y H A P Y K L |
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| UniRef90-K1QTF2 | L H P V I Q D Y H |
| UniRef90-W4L603 | F D PVI D A R H G G Y K |
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| UniRef90_D0NG20 | M D PVI E GWH GYK |
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| UniRef90-H2Z954 | F DQVI EARHHGYK |
| UniRef90-B5MGP4 | F NPVI K ERMS GY |
| UniRef90-W4FQ23 | M D PI I E G WH G Y K |
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| UniRef90-IOFXI7 | FDKVI E D Y H S PY K L |
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| UniRef90_UPI0000E491D5 | LD P CI S D Y H N G F |
| UniRef90_A9UWZ8 | FDAVI EDYHGGYK |
| UniRef90-P51546 | FDRVI E E $\square$ H HF K |
| UniRef90-P51544 | LD AVI K E Y H |
| UniRef90_W5LLJ5 | FDPVI K D R N G Y D |
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| UniRef90-Q760P7 | L D PVI K D Y H |
| UniRef90_V9KVM0 | FDPLI ELCHPGYQ |
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| UniRef90_K1PLF9 | LDPVI M D Y H K V K V |
| UniRef90_C3VUU4 | FDKVI Q H Y H T G |
| UniRef90-C3VUU4 | FDKVI Q H Y H T G |
| UniRef90_D8V719 | LD AVI K D Y H |
| UniRef90_C5LRV7 | F D PVI DRRHGGF |
| UniRef90-Q0H8V4 | F D PII I E A Y H P Y K L |
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| UniRef90_Q6XLN0 | FDPVI DEYHGGF |
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| UniRef90_C3VUU2 | FSLLVI Q C Y H T G |
| UniRef90-C3VUU2 | F S L V I Q ${ }^{\text {P H T G }}$ |
| UniRef90-C3VUU5 | F N L V I Q ${ }^{\text {P H T G }}$ |




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| UniRef90-B0W4C6 | FKKVINEYHVDF |
| UniRef90-F6ZLQ5 | F P P V L |
| UniRef90-F7D217 | F D PILEDRHGGYK |
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| UniRef90-UPI00046A1B9F | FNPIISDYH |
| UniRef90-COSTY4 |  |
| UniRef90-T2MHG3 | FDPVI NERHEEFR |
| UniRef90-J9J264 | F NQII K ${ }^{\text {a }}$ HGH |
| UniRef90-J9J264 | F NQI I K A Y HGH |
| UniRef90_J9J264 | F NQI I K A Y H |
| UniRef90-J9J264 | F NQI I KAYHGH |
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| UniRef90-D2DSQ8 | FDPI I EDYHKGFK |
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| UniRef90-17ML96 | L DKI I EEYH |
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| UniRef90-E4XWB3 | FDPVISARHNGY |
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| UniRef90-J9G8F4 | LDKIV $\mathrm{L}^{\text {D Y HKHGK}}$ |
| UniRef90-Q4AEC4 | FRCVI QDYHTG |
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| UniRef90-Q801J7 | LDPVI R D R H G G Y K |
| UniRef90-E4X1N9 | FDQI I ESRHGGYK |
| UniRef90_Q86LZ4 | LDPII SERHSGYK |
| UniRef90-E4YMV4 | FDPVISGRHNGF |
| UniRef90-Q8MWR8 | FNAVI QDYHTG |
| UniRef90_Q8MWR8 | F NAVI Q ${ }^{\text {P H T G }}$ |
| UniRef90-U3T1K4 | M DKI I E D Y H GFK |
| UniRef90-UPI0003F0E0D5 | FDNI I EKRHG |
| UniRef90_15B6N2 | LLPI I E D Y H |
| UniRef90-Q4AED2 | FDPVINEQHS GF |
| UniRef90-B7PA15 | F NPVIEDYHGGFK |
| UniRef90-C0QK17 | FRPVIETCHG |
| UniRef90-H2YNF3 | F DPVIEARHNGYK |
| UniRef90-UPI0003C91049 | F DPI I EDRHGGYK |
| UniRef90-J9J2X5 | F DKI I QKYHGHGK |
| UniRef90-V9P1K7 | FDPLI QE |
| UniRef90-Q8N0P3 | FNLVI QDYHTG |
| UniRef90-Q8N0P3 | FNLVI QDYHTG |
| UniRef90-A0A044TC48 | FDRILEDYH GFK |
| UniRef90-F1PK49 | FDPILEDLH GYK |
| UniRef90-J9G9S7 | F DLIVEDYHKHKK |
| UniRef90_J9G9S7 | FDLIVEDYHKHKK |
| UniRef90-B8CAT0 | LDPI I WEYHG |
| UniRef90 C7BCG0 | LDAVICDYH |
| UniRef90-C7BCG0 | L DAVICDYH |
| UniRef90-L1JG20 | 1 Y PlVKGWH |
| UniRef90-W8GJF4 | FDPLIQEYHG |
| UniRef90-F6YYB2 |  |
| UniRef90-J9G7D4 | FGP I K D L H P K D |
| UniRef90-F6Q9J1 | LYPVIKEYHENFD |
| UniRef90_UPI00034F3209 |  |
| UniRef90-J9J0E6 | F NLIIND Y H Q P NV |
| UniRef90-G3WTR1 | F D PVIEDYHN |
| UniRef90-HOZRK1 |  |
| UniRef90-Q4AED1 | F DPVINEYHMGF |
| UniRef90-D8LLX8 | MDVVIEGWH GYK |
| UniRef90-S0FXC7 | F DPVIRTYH |
| UniRef90-A6XH17 | F HPVIEAYHK G K M |
| UniRef90-UPI0003291C2E | FNLITED HTG |
| UniRef90-A6XH14 | MDKVIEDYHGH |
| UniRef90-E4XQL3 | F DPVISARHNGY |
| UniRef90-W5NQ67 |  |
| UniRef90-L1IF45 | $\square \mathrm{NP} \\|$ VKGWHN |



110
10 20
40



MRKH MTSELFEKLKG
THNKFK GFSSDTEDEENNSLLRKYGTREVGDEYMM DAAVLAKLEEGYAKLAASDSKSLLKKYLTKEVFDNLKN
 PEFQNPGCKSLLSKYLTDDVFQQLNG DPMARFHLKRGFPEFPDLCRNFTWMGRILTLDLYRRQFN HNMLKSHYPEYPNLSSHNNHMAKVLTTEHYEKL
DAEVPNMDFETKPDFTD KHDSDMSKHLTPELFTQLKA
 ENFPDLSHHDNFLAKCLTKELYASLFE $\square A K V Q A R W T E L G K I K K V S G N K Y F T P A V V E K V K G$ VDAATIKKI EAAYVKLPEGAKCKSLDRKYDTKDIVEKLKT VDSLKNLQTKUKSDEQNHSLTKKYLTDDVVNKYQS E EYPDLSTHNNHMAKVLTGLLYKKGRD LEAADPVKNYTRKHLLTPAVYNDLK D

LEA
VE P LTTLAKLLE $\begin{array}{rl}V E P L T L A K L L & G \\ Q S H N K Q K R A\end{array}$ LKXRFPEFPDLLS SHNNHMAKLL

NK $\square$ QAR WDE $\square \mathrm{K} N \square K$
VSSLHKHLTPELKARLDT KFCTPEVWEKYKD

DPMTK $\square R \square K R G S P E F P S L D G N Y T Y M A Q V L D \square H M Y T R Q F N$ KK L H DAKDCHSLAKKFVTPEAAKKFKD

GFPKFPPGT KSLLSKCLTPEDWEKYKD VDSATIQKDDDAY LKLDEGATCKSLLKKHLTKDVVEKLKH AEVLEKIAAV KAAHPGNRMAKHFDVDYYNTL

FEKYCN
MYKEYYN
TVEK\RKEQPE
 YPNVPEKDS I LAAKTLTPEDYDKMKK EPEVLATLERCFRSLPKSSNAGTLVARCLKRPVFDLIKH SAEYPDLRKHNNC MASNLTPA YARLCD YPQF DQNCNNDFRQ LLSREVYQQCKS
 EPEILATLERCFRLLKTASNAGTLVTRCLKRPIGDLLKH EPETVATLERCFRLLKSAGNSGTLIGRCLKRPTFDRIKH
 $R \perp Q D$
NVLGRF LKRRTF $\backslash M T K D$
 LLSKFYPDDLISHLRK S YLA RFLKRSVFDKIKK H T A L R L R F PR R DPDSGLHNHRAGVRTPSSGRAARP AKFQARWDGLKKLK VNGGNKHFTQQVVEKAK I THPSNIMAACFDASYYESL SYLSRFLKRPVYEKIKR YPTAADYPSGAEYRN ETGLEKFLTNEUYQKLRLD



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| UniRef90_S4VGM4 | L D L I I M D Y H ${ }^{90}$ |
| :---: | :---: |
| UniRef90-S4VGM4 | LDLI I MDY |
| UniRef90_UPI0003C36850 | FDPL I R D Y H G |
| UniRef90-L1JWJ9 | IY P I V K G WH G |
| UniRef90_L1JWJ9 | 1 Y P I V K G WH G |
| UniRef90-A0A034WCT4 | F D PVIR D Y H G |
| UniRef90_UPI000273E7B4 |  |
| UniRef90_A2VEU1 |  |
| UniRef90_K0SIU3 | LD P I L L Y H |
| UniRef90-A0A023JCY2 | L D AVVRDYH |
| UniRef90_A0A023JCY2 | L D AVVRDYH |
| UniRef90_E4YTH7 | F DKVI ESYHGH |
| UniRef90_Q9VF23 | F D P I K J Y H G |
| UniRef90-G3Q7M7 | FDRVI EAHHQH |
| UniRef90_17M9E4 | L NQI I Q E Y H G |
| UniRef90-Q6APG0 | LHP I I E E Y H G |
| UniRef90_UPI0003AF9237 | F D RVI E A Y H |
| UniRef90_G3VG18 | F D P I TE D R GYK |
| UniRef90_D8LK13 | Y Y P I TK G WH |
| UniRef90_C3YA35 | Y D P I K E WH G |
| UniRef90-B0XKA3 |  |
| UniRef90-X6NHX6 | LEK\IE |
| UniRef90-A0DIA0 | LLE PL I R E Y H |
| UniRef90_Q9TXL6 | F NKNI E D F Y G |
| UniRef90-Q5C104 | F D A V I A D Y K G G K I |
| UniRef90_G3UTB0 |  |
| UniRef90_G3UTB0 |  |
| UniRef90-B7FWU6 | LD P L I E H H |
| UniRef90-G7YHA8 | L D AVILD Y H G |
| UniRef90-G7YHA8 | L D AV I L D Y H G |
| UniRef90-P16641 | L D PL I CDYHG |
| UniRef90-P16641 | L D PL I C D Y H G |
| UniRef90-UPI000359ADA5 |  |
| UniRef90_UPI00027450F8 | F G P I L E D R X H Y K |
| UniRef90-G1K0E5 | FDPI I E D Y H G GFK |
| UniRef90_F8C7U3 | LHPI I RE HSGHDL |
| UniRef90_A0C714 | L E P I I R E Y H |
| UniRef90-A7RER2 | Y Y P V I Q A Y H K GF D I |
| UniRef90-C5H2S1 | F D PI I E D H S GF K |
| UniRef90-W5KAZ8 | F DRII E A Y H N |
| UniRef90-Q4AED0 | F DKVVA DYHG |
| UniRef90-B7Q8H2 | F N PVIE D Y H G G F K |
| UniRef90_T0Z717 |  |
| UniRef90_W2TU87 |  |
| UniRef90_A9V9A8 | F S K VLA D Y H |
| UniRef90-F2UA06 | F S KVI A D Y H G |
| UniRef90-B4J0X9 | F D P I E S Y HTGFK |
| UniRef90_G5B3K7 | F DPVI QERHSGYD |
| UniRef90_V3ZID8 | F NKVI K R Y H D G Y NV |
| UniRef90_B6AJN7 | FEKIVEVR H G |
| UniRef90-F2UIZ4 | F S KVI A DYHG |
| UniRef90_UPIO00258E25F | FDPLI R D $\square \mathrm{H}$ |
| UniRef90_G0R022 | LD QV V E Q Y H N F K |
| UniRef90-F2UC54 | FSKVI A DYHG |
| UniRef90_W4W835 | F D PFI R E L H |
| UniRef90_G3UPT6 | F D P V I Q |
| UniRef90_C3YT40 | F EPIMMK Y H G L |
| UniRef90_17MFD0 | F N LV |
| UniRef90-A0DFG3 | F DPIVK E |
| UniRef90_UPI0003C3672F | M VPLI K D M H |
| UniRef90-E9IN84 | F DPFVVRELH |
| UniRef90-H9KI57 | F D P L I R DV H |
| UniRef90-A7S2W4 | $F D P \vee 1$ |
| UniRef90_L1JFT7 | S VD M I K T V H G |
| UniRef90_D6X184 | L EPII K E Y |
| UniRef90_C3ZN86 | F D P I K A R H |
| UniRef90_C3YM85 | YDPVI KECHG |
| UniRef90_G6DSC2 | LT PL I K D L H N |
| UniRef90 K1Q0K5 |  |
| UniRef90-W7TR94 | F D P V I A C H P R Y N |
| UniRef90-W5J5E4 | LVPLI K DV ${ }^{\text {V }}$ |
| UniRef90_L7N0L9 | FDP L E H R P G S CK |
| UniRef90-A0CQV9 | LETHIREY |
| UniRef90_UPI0002246D9A | $L D P L I R D L H$ |
| UniRef90-A6XH11 | F L NVL Q S Y H |
| UniRef90-B4KPC2 | LV PLLK D M H |
| UniRef90-T1HYR5 |  |
| UniRef90-X6MIX1 |  |
| UniRef90_UPI0002B44E40 |  |
| UniRef90_R1BQX9 | F D RVCE G Y H G G G K V |
| UniRef90_H2KQF5 | F D P L L H F |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 55777631788999 |
| sol25 | $\begin{array}{ll}B & \text { B B B B B B }\end{array}$ |
| $\begin{aligned} & \text { sol5 } \\ & \text { sol0 } \end{aligned}$ | $\begin{array}{ll}B & B \\ & B \\ & B\end{array}$ |

$\underset{j p s s m}{j h m m}$


[^0]:    unas 21
    lupas_14
    lupas_28
    jnet
    sol25
    sol5
    0

