```
          β1        β2    η1        α1          ★ β3        β4    βN  ★ α2
          1         10        20        30        40        50        60        70        80
PhzF      ..MHNYVIIDAFASVPLEGNPVAVFFDADD...LPPAQMQRIAREM...NLSESTFVLKPR......NGGDALIRIFTPV.NELPFAGHPLLGTAIALGAHT....
YddE      ..KPQVYHVDAFTSQPFRGNSAGVVFPADN....LSEAQQLIAREL...GHSETAFLLHSD.......DSDVRIRYFTPT.VEVPICGHATVAAHYVRAKVL..GL
MAWDBP    .MKLPIFIADAFTARAFRGNPAAVCLLENE...LDEDMHQKIAREM...NLSETAFIRKLHPTDNFAQSSCFGLRWFTPA.SEVPLCGHATLASAAVLFHKI..KN
1S7J      .MSYPYYIVDAFAEEVFKGNPAAVYVLEKW...LPEAVMQNIAIEN...NLSETAFTVKE........GQSYALRWFTPE.REIDLCGHATLATAFVLFNYY..SV
Aes1      MTEHSFKQIDVFSNKGFRGNPVAVFFDADN...LSQKEMQQIAKWT...NLSETTFVQKPTI.....DKADYRLRIFTPE.CELSFAGHPTIGSCFAVVESGYCTP
DapF      ...MQFSKMHG......LGNDFVVVDGVTQNVFFTPETIRRLANRHCGIGFDQLLIVEAPYD.....PELDFHYRIFNADGSEVSQCGNGARCFARFVTLKG..LT
          β1        β2        α1        β3        β4        ▲ α2
```

```
          β5        β6        β7        β8        α3        β9        β10       α4    α5
          90        100       110       120       130       140       150       160       170       180
PhzF      DNHRLYLETQMGTIAFELERQNG.SVIAASMDQPIPTWTALG...RDAELLKALGIS.....DSTFPIEIYHNGPRHVFVGLPSIDALSALHPDHRALSNF....H
YddE      GNCTIWQTSLACKHRVTIEKHND..DYRISLEQGTPGFEPPLEGETRAAIINALHLTEDDI.LPGLPIQVATTG.HSKVIPLKPEVDIDALSPDLNALTAISKKIG
MAWDBP    MNSTLTFVTLSGELRARRAEDGIVLDLPLYPAHPQDFHEVEDLI.KTAIGNTLVQDICYSPDTQKLLVRLSDVYNRSFLENLKVNTENLLQVENTGKVKGLIL..T
1S7J      AEETLHFTSQSGPLAVTKKE......EYYYLDFPYILPERIP...ILPEYEAALGTK..........IYEAYLG.RDLFFVLKDEETVAKITPDFSALKALDLG..
Aes1      KNCKIIQECLAGLVELTIDGEKD.EDTWISFKLPYYKILQTSET.AISEVENALGIPLNYSSQV.SPPVLIDDGPKWLVIQLPNATDVLNLVPKFQSLSQVCKNND
DapF      NKKDISVSTQKGNMVLTVKDM.....NQIRVNMGEPIWE...PAKIPFTANKFEKNYILRTDIQTVLCGAVSMGNPHCVVQVDDIQTANVEQLGPLLES.HERFPE
          β5        β6        β7        η1        β8        β9        β10       α3
```

```
          β11       β12       η2  βC ★   α6        β13       β14       β15       β16
          190       200       210       220       230       240       250       260       270
PhzF      DMAINCFAGA.GRRWRSRMFSPAYGVVEDAATGSAAGPLAIHLARHGQIEF..GQPVEILQGVEIGRPSLMFAKAEGRAEQLTRVEVSGNGVTFGRGTIVL....
YddE      CNGFFPFQIRPGKNETDGRFSPAIGIVEDPVTGNANGPGAWLVHHNVLPHDGNVLRVKGHQGRALGRD.GIEVTVTIRDNQPEKVTISGTAVILFHAEWAIELGS
MAWDBP    LKGEPGGQTQ.AFDFYSRYFAPWVGVAEDPVTGSAHAVLSSYWSQHLGK.....KEMHAFQCSHRGGELGISLRPDG......RVDIRGGAAVVLEGTLTA....
1S7J      .VGVIVTASGDSVDFVSRTFFPKLRINEDPVCGSAHANLIPYWGKRLNQ.....TTLSAYQVSP..RGGFLTCEVKE.....NRVIIGGTAKLFAKGEAYL....
Aes1      WIGVTVFGELGKDSFESRSFAPLIHVNEDPACGSGAGAVGVYIGSSQKTPT..SLSFTISQGTKLSRQAISKVSVDVSSNKSIAVFVGGQAKTCISGKSFI....
DapF      RVNAGFMQIINKEHIKLRVYER..GAGETQACGSGACAAVAVGIMQGLLN....NNVQVDL.....PGGSLMIEWNGV...GHPLYMTGEATHIYDGFITL....
          β11       β12       βC  ▲ α4        β13       β14       β15       β16
```