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|----------------|-----------|----------------|----------------|-------------------------------------------------------------------------------------|----|
| NTDB id 1159   | ABDM36    | RS04765        | WP 001166105.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKDVKKEEKEEPV..... | 0  |
| NTDB id 1150   | A1552VC   | RS08580        | WP 001166105.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKDVKKEEKEEPV..... | 0  |
| NTDB id 1395   | DSB67     | RS04445        | WP 010649155.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKDVKKEEKEEPV..... | 0  |
| NTDB id 1362   | HI 1008   | AAC22669.1     |                | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKDVKKEEKEEPV..... | 0  |
| NTDB id 1382   | A4U84     | RS07375        | WP 062924234.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKDVKKEEKEEPV..... | 0  |
| NTDB id 595    | KW2       | RS08725        | WP 021037687.1 | .....MEKILDKLKEYWKIM.LLVVICALIAGGIFYIFTNSPKPAETLSVEN....LSSS...STKSSVSKFNSSSSEK     | 65 |
| NTDB id 521    | SMSK321   | RS04960        | WP 000443804.1 | .....MESIIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKDVKKEEKEEPV      | 69 |
| NTDB id 493    | SM12261   | RS04300        | WP 000387351.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKDVKKEEKEEPV      | 69 |
| NTDB id 263    | KZH43     | RS04195        | WP 000387330.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDLVSEKEVNKEEKEEPV      | 69 |
| NTDB id 222    | SPD       | RS04535        | WP 000387330.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDLVSEKEVNKEEKEEPV      | 69 |
| NTDB id 188    | SPR       | RS04295        | WP 000387330.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDLVSEKEVNKEEKEEPV      | 69 |
| NTDB id 153    | SP        | RS04730        | WP 000387344.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKEVNKEEKEEPV      | 69 |
| NTDB id 1069   | ABD1      | RS03060        | WP 043960841.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKEVNKEEKEEPV      | 0  |
| NTDB id 1041   | HON27     | RS14740        | WP 005124713.1 | .....MEALIEKIKKEYKLIYICTGLGLLVGGFFLLKPAPQTPVKETNLQAE...VVAISKDSSTEKEVNKEEKEEPV      | 0  |
| NTDB id 36     | MW        | RS08230        | WP 001793467.1 | MVLLYQFLLRYKDFLTQWKLYIISAVVLMVVLIGFIFWRQDDYTSRNFENKDNALKQSTSENSSLSKVEDVQVKDGDNSK    | 80 |
| NTDB id 20     | SA        | RS08005        | WP 001802022.1 | MVLLYQFLLRYKDFLTQWKLYIISAVVLMVVLIGFIFWRQDDYTSRNFENKDTALKQSTSENSSLSKVEDVQVKDGDNSK    | 80 |
| NTDB id 105    | BSU 25590 | NP 390437.1    |                | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 57 |
| NTDB id 1014   | ACIAD     | RS13855        | WP 004924483.1 | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 0  |
| NTDB id 1127   | NGFG      | RS10560        | WP 003703428.1 | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 5  |
| NTDB id 1126   | NGFG      | RS09375        | WP 003703428.1 | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 5  |
| NTDB id 1125   | NGFG      | RS07215        | WP 003703428.1 | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 5  |
| NTDB id 1108   | NGFG      | RS06525        | WP 003703428.1 | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 5  |
| NTDB id 103207 | AOW69     | RS00925        | WP 002855574.1 | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 0  |
| NTDB id 1242   | Cj0011c   | YP 002343483.1 |                | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            | 0  |
| consensus      |           |                |                | .....MNWLNQHKKAIILAASAAVFTAIMIFLATG...KNKE...PVKQAVPTE...TENTVVVKQEANNDE            |    |

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| NTDB id 1159   | ABDM36    | RS04765        | WP 001166105.1 | .....EQDLITVDYKGAVKSPGYYLDTYSSRNDKLYLFCMLF...AKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA..... | 33  |
| NTDB id 1150   | A1552VC   | RS08580        | WP 001166105.1 | .....EQDLITVDYKGAVKSPGYYLDTYSSRNDKLYLFCMLF...AKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA..... | 33  |
| NTDB id 1395   | DSB67     | RS04445        | WP 010649155.1 | .....EQDLITVDYKGAVKSPGYYLDTYSSRNDKLYLFCMLF...AKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA..... | 25  |
| NTDB id 1362   | HI 1008   | AAC22669.1     |                | .....EQDLITVDYKGAVKSPGYYLDTYSSRNDKLYLFCMLF...AKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA..... | 38  |
| NTDB id 1382   | A4U84     | RS07375        | WP 062924234.1 | .....EQDLITVDYKGAVKSPGYYLDTYSSRNDKLYLFCMLF...AKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA..... | 39  |
| NTDB id 595    | KW2       | RS08725        | WP 021037687.1 | NKNEIMVDLKGAVAKPNVYQISSDERLVDLI.....RQAGGFTDQADQKSINLSAKLKDEEVIYVPKVGESSS               | 133 |
| NTDB id 521    | SMSK321   | RS04960        | WP 000443804.1 | EQDLITVDVKGAVKSPGIYDLVSGSRVNDV.....QKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA                | 137 |
| NTDB id 493    | SM12261   | RS04300        | WP 000387351.1 | EQDLITVDVKGAVKSPGIYDLVSGSRVNDV.....QKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA                | 137 |
| NTDB id 263    | KZH43     | RS04195        | WP 000387330.1 | EQDLITVDVKGAVKSPGIYDLVSGSRVNDV.....QKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA                | 137 |
| NTDB id 222    | SPD       | RS04535        | WP 000387330.1 | EQDLITVDVKGAVKSPGIYDLVSGSRVNDV.....QKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA                | 137 |
| NTDB id 188    | SPR       | RS04295        | WP 000387330.1 | EQDLITVDVKGAVKSPGIYDLVSGSRVNDV.....QKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA                | 137 |
| NTDB id 153    | SP        | RS04730        | WP 000387344.1 | EQDLITVDVKGAVKSPGIYDLVSGSRVNDV.....QKAGGLTEQADSKSLNLAQKVSDEALVYVPTKGEESA                | 137 |
| NTDB id 1069   | ABD1      | RS03060        | WP 043960841.1 | .....MQYSMRFWKN...K.YFVLIMLCGLVISPSVCAQSFQDNFQEWKVKQQM..YDQK.....                       | 49  |
| NTDB id 1041   | HON27     | RS14740        | WP 005124713.1 | .....MQYSMRFWKN...K.YFVLIMLCGLVISPSVCAQSFQDNFQEWKVKQQM..YDQK.....                       | 49  |
| NTDB id 36     | MW        | RS08230        | WP 001793467.1 | NKGPVYVDVKGAVKHPNVYKMTSKDRVVD.LL.....DKAQLLEDADVSRINLSEKLTQDKMIFIPHKGQKNV               | 147 |
| NTDB id 20     | SA        | RS08005        | WP 001802022.1 | NKGPVYVDVKGAVKHPNVYKMTSKDRVVD.LL.....DKAQLLEDADVSRINLSEKLTQDKMIFIPHKGQKNV               | 147 |
| NTDB id 105    | BSU 25590 | NP 390437.1    |                | SNETIVIDIKGAVQHPGVYEM.RTGDRVS.....QAI...EKAGGTSEQADEAQVNLAELIQDGTVVYIPKKGEETA           | 125 |
| NTDB id 1014   | ACIAD     | RS13855        | WP 004924483.1 | .....MSIRHFFT...FFWAT.....LLTLFSMQI...VFAQQGFDQYDQAW.....KTQQKAHDTR                     | 45  |
| NTDB id 1127   | NGFG      | RS10560        | WP 003703428.1 | ATPYRFLIRHIVARCGLLFATLKGKTMKKMFVLFCLMF.....                                             | 44  |
| NTDB id 1126   | NGFG      | RS09375        | WP 003703428.1 | ATPYRFLIRHIVARCGLLFATLKGKTMKKMFVLFCLMF.....                                             | 44  |
| NTDB id 1125   | NGFG      | RS07215        | WP 003703428.1 | ATPYRFLIRHIVARCGLLFATLKGKTMKKMFVLFCLMF.....                                             | 44  |
| NTDB id 1108   | NGFG      | RS06525        | WP 003703428.1 | ATPYRFLIRHIVARCGLLFATLKGKTMKKMFVLFCLMF.....                                             | 44  |
| NTDB id 103207 | AOW69     | RS00925        | WP 002855574.1 | .....MCKLLFLF..FA.....                                                                  | 10  |
| NTDB id 1242   | Cj0011c   | YP 002343483.1 |                | .....MCKLLFLF..FA.....                                                                  | 10  |
| consensus      |           |                |                | .....MCKLLFLF..FA.....                                                                  |     |

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|----------------|-----------|----------------|---------------------------------|---------------------------------|-------------------------------|--------------------------|------------|-------------|--------------|--------------|----------|-----|
| NTDB id 1159   | ABDM36    | RS04765        | WP 001166105.1                  | .....VEEGIVITVNINTASAEELATLLKGI | GLKKAQAI                      | VDYREANGP                | FTH        | IDDLTNVKGIG | EATVR        | 95           |          |     |
| NTDB id 1150   | A1552VC   | RS08580        | WP 001166105.1                  | .....VEEGIVITVNINTASAEELATLLKGI | GLKKAQAI                      | VDYREANGP                | FTH        | IDDLTNVKGIG | EATVR        | 95           |          |     |
| NTDB id 1395   | DSB67     | RS04445        | WP 010649155.1                  | .....KYEGIEITVNVNSATAQEIATLLIGI | GEKKAQD                       | IVEYRNEHG                | PFKTAADL   | TKVKGIG     | EATVR        | 87           |          |     |
| NTDB id 1362   | HI 1008   | AAC22669.1     | .....EAQVAPAVVSDKLNINTATASEIQKS | LTGIGAKKA                       | EAI                           | VQYREKHGN                | FXNAE      | QQLLEVQ     | GIGKATLE     | 104          |          |     |
| NTDB id 1382   | A4U84     | RS07375        | WP 062924234.1                  | .....VAATQKVNANV                | VNINTATASEIQDKL               | VGIGAKKAQAI              | IVEYREKNGK | FLNVEQL     | TEVSGIGKATLE | 104          |          |     |
| NTDB id 595    | KW2       | RS08725        | WP 021037687.1                  | SESTDSPTG...SSVSNQISTTSGPKVNIN  | KADLT                         | TELQK.LTGIGQKKAQD        | I          | DFRMKNGD    | FKSIEDL      | KGKVS        | GFGDKTLE | 209 |
| NTDB id 521    | SMSK321   | RS04960        | WP 000443804.1                  | SQHTGSGAP.....SSTS              | SKDKKINLN                     | NKASLEELKQ.VKGLGGKRAQD   | I          | IDHREANGK   | FKSVDEL      | KKVSGIGAKTIE | 207      |     |
| NTDB id 493    | SM12261   | RS04300        | WP 000387351.1                  | SQQAGPGTA.....SSTS              | KEKKVNLN                      | NKASLEELKQ.VKGLGGKRAQD   | I          | IDHREANGK   | FKSVDEL      | KKVSGIGAKTIE | 207      |     |
| NTDB id 263    | KZH43     | RS04195        | WP 000387330.1                  | SQQTGLGTA.....SSISKEKKVNLN      | NKASLEELKQ.VKGLGGKRAQD        | I                        | IDHREANGK  | FKSVDEL     | KKVSGIGGKTIE | 207          |          |     |
| NTDB id 222    | SPD       | RS04535        | WP 000387330.1                  | SQQTGLGTA.....SSISKEKKVNLN      | NKASLEELKQ.VKGLGGKRAQD        | I                        | IDHREANGK  | FKSVDEL     | KKVSGIGGKTIE | 207          |          |     |
| NTDB id 188    | SPR       | RS04295        | WP 000387330.1                  | SQQTGLGTA.....SSISKEKKVNLN      | NKASLEELKQ.VKGLGGKRAQD        | I                        | IDHREANGK  | FKSVDEL     | KKVSGIGGKTIE | 207          |          |     |
| NTDB id 153    | SP        | RS04730        | WP 000387344.1                  | SQQTGSGTA.....SSTS              | KEKKVNLN                      | NKASLEELKQ.VKGLGGKRAQD   | I          | IDHREANGK   | FKSVDEL      | KKVSGIGGKTIE | 207      |     |
| NTDB id 1069   | ABD1      | RS03060        | WP 043960841.1                  | LNISKSSHSNSSKISQTKNFNDSTGQ      | IHLNQANVNE                    | FQQ.LKGIGEKKAQAI         | IVEYRQKNGS | FKNIDEI     | KNVKGIG      | PAIFE        | 128      |     |
| NTDB id 1041   | HON27     | RS14740        | WP 005124713.1                  | LNITKSSHSNGSKISQTKNFNDSTGQ      | IHLNQANVNE                    | FQQ.LKGVGEKKAQAI         | IVEYRQKNGS | FKNIDEI     | KNVKGIG      | PAIFE        | 128      |     |
| NTDB id 36     | MW        | RS08230        | WP 001793467.1                  | EP....QIGVNS..VHVKNGNTNNTK      | VNLNTASVSELMS.VPGVGQAKANA     | IVEYRNQQGAFQE            | IDDLK      | KKVKGFG     | SKTFD        | 220          |          |     |
| NTDB id 20     | SA        | RS08005        | WP 001802022.1                  | EP....QIEVNS..VHVKNGNTNNTK      | VNLNTASVSELMS.VPGVGQAKANA     | IVEYRNQQGAFQE            | IDDLK      | KKVKGFG     | SKTFD        | 220          |          |     |
| NTDB id 105    | BSU 25590 | NP 390437.1    |                                 | V....QQGGGGS..V..QSDGGKGALVN    | INTATLEELQG.ISGVGPSKAE        | AI                       | IAYREENG   | RFQTI       | IEDIT        | TKVSGIG      | EKSFE    | 196 |
| NTDB id 1014   | ACIAD     | RS13855        | WP 004924483.1                  | LNSSASHHSLSK..P..TQQSGTG        | VKNINSAT                      | AKELQQ.LHGVGEKKALAI      | IVEYRQYQK  | FASVDDL     | QKVKGIG      | PKFIE        | 120      |     |
| NTDB id 1127   | NGFG      | RS10560        | WP 003703428.1                  | .....SCAFSLAAVNINAASQQE         | LEA.LPGIGPAKAKAIAEYRAQNGAFKSV | VDDL                     | IKVKGIG    | PAVLA       |              | 105          |          |     |
| NTDB id 1126   | NGFG      | RS09375        | WP 003703428.1                  | .....SCAFSLAAVNINAASQQE         | LEA.LPGIGPAKAKAIAEYRAQNGAFKSV | VDDL                     | IKVKGIG    | PAVLA       |              | 105          |          |     |
| NTDB id 1125   | NGFG      | RS07215        | WP 003703428.1                  | .....SCAFSLAAVNINAASQQE         | LEA.LPGIGPAKAKAIAEYRAQNGAFKSV | VDDL                     | IKVKGIG    | PAVLA       |              | 105          |          |     |
| NTDB id 1108   | NGFG      | RS06525        | WP 003703428.1                  | .....SCAFSLAAVNINAASQQE         | LEA.LPGIGPAKAKAIAEYRAQNGAFKSV | VDDL                     | IKVKGIG    | PAVLA       |              | 105          |          |     |
| NTDB id 103207 | AOW69     | RS00925        | WP 002855574.1                  | .....LTAFLFGA                   | VNINTATL                      | KELKS.LNGIGEAKAKAILEYRKE | .ANFTS     | IDDLK       | KKVKGIG      | DKLFE        | 70       |     |
| NTDB id 1242   | Cj0011c   | YP 002343483.1 |                                 | .....LTAFLFGA                   | VNINTATL                      | KELKS.LNGIGEAKAKAILEYRKE | .ANFTS     | IDDLK       | KKVKGIG      | DKLFE        | 70       |     |
| consensus      |           |                |                                 | ***! !** !*                     |                               |                          |            |             |              |              | ***      |     |

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| NTDB id 1159   | ABDM36    | RS04765        | WP 001166105.1 | NNAARILL         | 103     |       |     |
| NTDB id 1150   | A1552VC   | RS08580        | WP 001166105.1 | NNAARILL         | 103     |       |     |
| NTDB id 1395   | DSB67     | RS04445        | WP 010649155.1 | KNEDRILL         | 95      |       |     |
| NTDB id 1362   | HI 1008   | AAC22669.1     |                | KNRDRIIF         | 112     |       |     |
| NTDB id 1382   | A4U84     | RS07375        | WP 062924234.1 | KNRDCIVIE        | 113     |       |     |
| NTDB id 595    | KW2       | RS08725        | WP 021037687.1 | KLKDEISID        | 218     |       |     |
| NTDB id 521    | SMSK321   | RS04960        | WP 000443804.1 | KLKDYVTVD        | 216     |       |     |
| NTDB id 493    | SM12261   | RS04300        | WP 000387351.1 | KLKDYVTVD        | 216     |       |     |
| NTDB id 263    | KZH43     | RS04195        | WP 000387330.1 | KLKDYVTVD        | 216     |       |     |
| NTDB id 222    | SPD       | RS04535        | WP 000387330.1 | KLKDYVTVD        | 216     |       |     |
| NTDB id 188    | SPR       | RS04295        | WP 000387330.1 | KLKDYVTVD        | 216     |       |     |
| NTDB id 153    | SP        | RS04730        | WP 000387344.1 | KLKDYVTVD        | 216     |       |     |
| NTDB id 1069   | ABD1      | RS03060        | WP 043960841.1 | KNKSRLIAL        | 136     |       |     |
| NTDB id 1041   | HON27     | RS14740        | WP 005124713.1 | KNKSRLIAL        | 136     |       |     |
| NTDB id 36     | MW        | RS08230        | WP 001793467.1 | KLKSYFTI         | 228     |       |     |
| NTDB id 20     | SA        | RS08005        | WP 001802022.1 | KLKSYFTI         | 228     |       |     |
| NTDB id 105    | BSU 25590 | NP 390437.1    |                | KIKSSIIVK        | 205     |       |     |
| NTDB id 1014   | ACIAD     | RS13855        | WP 004924483.1 | KNRDRLAI         | 128     |       |     |
| NTDB id 1127   | NGFG      | RS10560        | WP 003703428.1 | KLKDQASVGAPAPKGP | PAKPVLP | PAVKK | 131 |
| NTDB id 1126   | NGFG      | RS09375        | WP 003703428.1 | KLKDQASVGAPAPKGP | PAKPVLP | PAVKK | 131 |
| NTDB id 1125   | NGFG      | RS07215        | WP 003703428.1 | KLKDQASVGAPAPKGP | PAKPVLP | PAVKK | 131 |
| NTDB id 1108   | NGFG      | RS06525        | WP 003703428.1 | KLKDQASVGAPAPKGP | PAKPVLP | PAVKK | 131 |
| NTDB id 103207 | AOW69     | RS00925        | WP 002855574.1 | KIKNDITVE        | 79      |       |     |
| NTDB id 1242   | Cj0011c   | YP 002343483.1 |                | KIKNDITIE        | 79      |       |     |
| consensus      |           |                |                | *****            |         |       |     |

 non conserved  
 similar  
  $\geq 50\%$  conserved