

|                 |                              |          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |   |   |   |   |   |   |   |   |       |    |   |   |       |    |    |    |    |   |    |
|-----------------|------------------------------|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|---|---|---|---|---|---|---|---|-------|----|---|---|-------|----|----|----|----|---|----|
| NTDB id 85      | BSU 00860 NP 387967.1        | ..MMFGRF | T | E | R | A | Q | K | V | L | A | L | A | Q | E | E | A | L | R | L | G | H | N | N | I | G | T | E | H | I | L | L | G | L | V | R | E | G | E | I | A | A | K | A | L | Q | A | L | G | L | G | S | E | K | I | Q | K  | E  | V | E | S | L | I | G | R | G | ..... | 71 |   |   |       |    |    |    |    |   |    |
| NTDB id 610     | V4T04 RS10165 WP 012897346.1 | M        | K | F | E | N | I | K | Y | T | P | T | L | D | R | I | L | E | K | A | E | E | Y | A | H | Q | Y | Q | Y | G | T | T | E | S | A | H | L | A | A | M | A | T | T | S | G | S | I | A | Y | S | L | L | A | G | M | N | V  | D  | S | S | D | L | L | I | D | L | E     | D  | L | S | ..... | SH | 72 |    |    |   |    |
| NTDB id 377     | SMU RS09275 WP 002262344.1   | ....     | M | T | D | Y | S | L | K | M | Q | E | V | F | R | L | A | Q | F | E | A | A | R | F | E | S | S | Y | L | E | S | W | H | V | L | L | A | M | V | E | I | D | S | S | V | A | G | L | S | F | A | E | F | E | A | D | V  | R  | F | E | D | Y | Q | A | A | I | L     | A  | I | G | K     | K  | P  | K  | S  | S | 76 |
| NTDB id 329     | STU RS10020 WP 011225298.1   | ....     | M | T | I | Y | S | R | K | M | Q | A | I | F | H | R | A | Q | L | E | A | E | R | F | E | S | P | E | L | T | W | H | V | L | L | A | M | V | E | P | G | S | V | A | Y | L | T | F | D | E | D | R | I | H | S | E | E  | T  | A | A | V | L | A | M | E | K | R     | P  | K | D | L     | S  | 76 |    |    |   |    |
| NTDB id 297     | STER RS00545 WP 011680614.1  | ....     | M | T | I | Y | S | R | K | M | Q | A | I | F | H | R | A | Q | L | E | A | E | R | F | E | S | P | E | L | T | W | H | V | L | L | A | M | V | E | P | G | S | V | A | Y | L | T | F | D | E | D | R | I | H | S | E | E  | T  | A | A | V | L | A | M | E | K | R     | P  | K | D | L     | S  | 76 |    |    |   |    |
| NTDB id 1129414 | GPW48 RS09530 WP 074390078.1 | .....    | M | K | I | S | T | G | L | Q | R | V | F | E | D | A | Q | L | V | A | Q | R | Y | A | C | D | Y | L | E | T | W | H | V | L | L | S | F | V | I | N | H | D | T | V | A | G | A | V | L | A | E | Y | P | I | S | I | S  | .. | D | Y | E | H | A | T | F | V | V     | T  | D | K | V     | Y  | .. | RE | 71 |   |    |
| NTDB id 287     | SP RS11210 WP 001109712.1    | .....    | M | N | Y | S | K | A | L | N | E | C | I | E | S | A | Y | M | V | A | G | H | F | G | A | R | Y | L | E | S | W | H | L | L | I | A | M | S | N | H | S | Y | S | V | A | G | A | T | L | N | D | P | Y | E | M | D | .. | R  | L | E | E | V | A | L | E | L | T     | E  | T | D | Y     | .. | SQ | 71 |    |   |    |
| NTDB id 290     | KZH43 RS10025 WP 001109677.1 | .....    | M | N | Y | S | K | A | L | N | E | C | I | E | S | A | Y | M | V | A | G | H | F | G | A | R | Y | L | E | S | W | H | L | L | I | A | M | S | N | H | S | Y | S | V | A | G | A | T | L | N | D | P | Y | E | M | D | .. | R  | L | E | E | V | A | L | E | L | T     | E  | T | D | Y     | .. | SQ | 71 |    |   |    |
| NTDB id 289     | SPD RS10700 WP 001109677.1   | .....    | M | N | Y | S | K | A | L | N | E | C | I | E | S | A | Y | M |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |   |   |   |   |   |   |   |   |       |    |   |   |       |    |    |    |    |   |    |

|           |         |                              |                                                                                      |     |
|-----------|---------|------------------------------|--------------------------------------------------------------------------------------|-----|
| NTDB id   | 85      | BSU 00860 NP 387967.1        | .QEMSQTHYTPRAKKVIELSMDEARKLGHSYVGTEHLLGLIREGEGVAARVLNNLGVS LNKA RQQVLQL..L.....      | 142 |
| NTDB id   | 610     | V4T04 RS10165 WP 012897346.1 | VKVKRSTLRFSPPRAEEVMTAASF LAIHNNSEAVGTEHL YALLQVEDGFCLQLKL.....QKINIVSLRKELEKR        | 143 |
| NTDB id   | 377     | SMU RS09275 WP 002262344.1   | N..DIMLLEQSHAKRTLAEAAAI SQVTHAKEVGTEHVL FAMLNPNLLATRIELELVGFHAKDDGESIRLLDLRKVIERY    | 154 |
| NTDB id   | 329     | STU RS10020 WP 011225298.1   | ESDIIDLRAQSPAL EAM LQEAGGIASVTGA VEG SEHVLMFAFLHKDLMVCRLLEVAGFGYKDDSDKPRIIDLRRLSERN  | 156 |
| NTDB id   | 297     | STER RS00545 WP 011680614.1  | ESDIIDLRAQSPAL EAM LQEAGGIASVTGA VEG SEHVLMFAFLHKDLMVCRLLEVAGFGYKDDSDKPRIIDLRRLSERN  | 156 |
| NTDB id   | 1129414 | GPW48 RS09530 WP 074390078.1 | ELDSFRIIPSSKRLLDETASFAKKIAEV VKAKELGTEHLFMAMLLDKRSTAS QILDKVGFCFEDSDDKFRFLDLRXNLEAR  | 151 |
| NTDB id   | 287     | SP RS11210 WP 001109712.1    | D.ETFTTELPSRRLLQVLFDEAEYVASV VHAKVLGTEHVL YAILHDGNALATRILERAGFSYEDKKDQVKI AALRRNLEER | 150 |
| NTDB id   | 290     | KZH43 RS10025 WP 001109677.1 | D.ETFTTELPSRRLLQILFDEAEYVASV VHAKVLGTEHVL YAILHDGNALATRILERAGFSYEDKKDQVKI AALRRNLEER | 150 |
| NTDB id   | 289     | SPD RS10700 WP 001109677.1   | D.ETFTTELPSRRLLQILFDEAEYVASV VHAKVLGTEHVL YAILHDGNALATRILERAGFSYEDKKDQVKI AALRRNLEER | 150 |
| consensus |         |                              | * * * * *                                                                            |     |

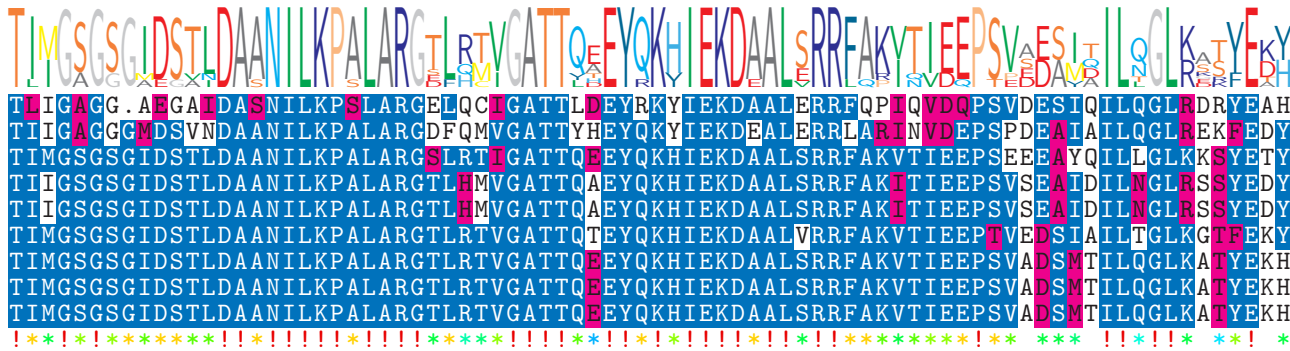
|           |         |                              |                                                                                    |     |
|-----------|---------|------------------------------|------------------------------------------------------------------------------------|-----|
| NTDB id   | 85      | BSU 00860 NP 387967.1        | .G.....SNETGSSAAGTNSNANTPTLDSLARDLTALAKEDSLDPVIGRSKEIQRVITEVLSRRTKN                | 202 |
| NTDB id   | 610     | V4T04 RS10165 WP 012897346.1 | TGLKVPESKKAVTPMSKRKMA.....KGVAENSTPTLDSVSSDLTEEARLGKLDPMIGREAEIDRLIHILSRRTKN       | 215 |
| NTDB id   | 377     | SMU RS09275 WP 002262344.1   | AGFSKEDIKAIFEMRKPKKVKNSSFSDLMKPP.SVTGELADFTDLTELARQGRLEPVIGREQEISRMVQILSRKTKN      | 232 |
| NTDB id   | 329     | STU RS10020 WP 011225298.1   | AGLSKQDCLKAI.HDLRKPCKSKASANFANMMQPQQSS.TGELADYTKDLTALAESGNLPITGRDEEISRMIVQLSRKTKN  | 235 |
| NTDB id   | 297     | STER RS00545 WP 011680614.1  | AGLSKQDCLKAI.HDLRKPCKSKASANFANMMQPQQSS.TGELADYTKDLTALAESGNLPDVIGRDEEISRMIVQLSRKTKN | 235 |
| NTDB id   | 1129414 | GPW48 RS09530 WP 074390078.1 | AGFTKEDCLKAIRSVMKGGKAKPTNMGMQMCMPPAPQSGGLEDYTRDLTALAREGKITPEVIGRDAEIARMIQILSRKTKN  | 230 |
| NTDB id   | 287     | SP RS11210 WP 001109712.1    | AGWTREDCLKAIRQRHRTVADKQNSMANMMGMPQTP.SGGLEDYTHDLTEQARS GKLEPVIGRDKEISRMIVQLSRKTKN  | 228 |
| NTDB id   | 290     | KZH43 RS10025 WP 001109677.1 | AGWTREDCLKAIRQRHRTVADKQNSMANMMGMPQTP.SGGLEDYTHDLTEQARS GKLEPVIGRDKEISRMIVQLSRKTKN  | 228 |
| NTDB id   | 289     | SPD RS10700 WP 001109677.1   | AGWTREDCLKAIRQRHRTVADKQNSMANMMGMPQTP.SGGLEDYTHDLTEQARS GKLEPVIGRDKEISRMIVQLSRKTKN  | 228 |
| consensus |         |                              | *!*****!* * * * *                                                                  |     |

|           |         |                              |                                                                                     |     |
|-----------|---------|------------------------------|-------------------------------------------------------------------------------------|-----|
| NTDB id   | 85      | BSU 00860 NP 387967.1        | NPVLIGEPGVGKTAIAEGLAQQTINNVEPEILRDKRVMTLDMGTIVVAGTKYRGFEFEDRLKKVMDEIRQAGNIIILFIDELH | 282 |
| NTDB id   | 610     | V4T04 RS10165 WP 012897346.1 | NPVLVGEPGVGKSATIEGLAQRIVNGQVPIGLMNSRIMAINMATVVAGTKFRGEFEDRLTAIVEEVSSDPDVIIFIDELH    | 295 |
| NTDB id   | 377     | SMU RS09275 WP 002262344.1   | NPVLVGDAAGVGKTALAYGLAQRIVDSAVPFELADMKVLELDMMSVVAGTRFRGDFEERMNQIADIEADGHIVLFIDELH    | 312 |
| NTDB id   | 329     | STU RS10020 WP 011225298.1   | NPVLVGEAGVGKTALALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDIEADGKIILFIDELH     | 315 |
| NTDB id   | 297     | STER RS00545 WP 011680614.1  | NPVLVGEAGVGKTALALGLAQRIASGEVPFELADMRILELDMMSVVAGTRFRGDFEERMNQIIDIEADGKIILFIDELH     | 315 |
| NTDB id   | 1129414 | GPW48 RS09530 WP 074390078.1 | NPVLVGDAAGVGKTALALGLAQRVAAGDVPSLAKMRVLELDLMNVTAGTRFRGDFEERMNNIINDIEEDGGVILFIDELH    | 310 |
| NTDB id   | 287     | SP RS11210 WP 001109712.1    | NPVLVGDAAGVGKTALALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIINKDIEEDGGVILFIDELH  | 308 |
| NTDB id   | 290     | KZH43 RS10025 WP 001109677.1 | NPVLVGDAAGVGKTALALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIINKDIEEDGGVILFIDELH  | 308 |
| NTDB id   | 289     | SPD RS10700 WP 001109677.1   | NPVLVGDAAGVGKTALALGLAQRIASGDVPAEMAKMRVLELDLMNVVAGTRFRGDFEERMNNIINKDIEEDGGVILFIDELH  | 308 |
| consensus |         |                              | NPVLIGEPGVGKTAIAEGLAQQTINNVEPEILRDKRVMTLDMGTIVVAGTKYRGFEFEDRLKKVMDEIRQAGNIIILFIDELH |     |

logo

NTDB id 85 BSU 00860 NP 387967.1  
NTDB id 610 V4T04 RS10165 WP 012897346.1  
NTDB id 377 SMU RS09275 WP 002262344.1  
NTDB id 329 STU RS10020 WP 011225298.1  
NTDB id 297 STER RS00545 WP 011680614.1  
NTDB id 1129414 GPW48 RS09530 WP 074390078.1  
NTDB id 287 SP RS11210 WP 001109712.1  
NTDB id 290 KZH43 RS10025 WP 001109677.1  
NTDB id 289 SPD RS10700 WP 001109677.1

consensus



361  
375  
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388

logo

NTDB id 85 BSU 00860 NP 387967.1  
NTDB id 610 V4T04 RS10165 WP 012897346.1  
NTDB id 377 SMU RS09275 WP 002262344.1  
NTDB id 329 STU RS10020 WP 011225298.1  
NTDB id 297 STER RS00545 WP 011680614.1  
NTDB id 1129414 GPW48 RS09530 WP 074390078.1  
NTDB id 287 SP RS11210 WP 001109712.1  
NTDB id 290 KZH43 RS10025 WP 001109677.1  
NTDB id 289 SPD RS10700 WP 001109677.1

consensus



441  
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465  
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460  
460

logo

NTDB id 85 BSU 00860 NP 387967.1  
NTDB id 610 V4T04 RS10165 WP 012897346.1  
NTDB id 377 SMU RS09275 WP 002262344.1  
NTDB id 329 STU RS10020 WP 011225298.1  
NTDB id 297 STER RS00545 WP 011680614.1  
NTDB id 1129414 GPW48 RS09530 WP 074390078.1  
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NTDB id 290 KZH43 RS10025 WP 001109677.1  
NTDB id 289 SPD RS10700 WP 001109677.1

consensus

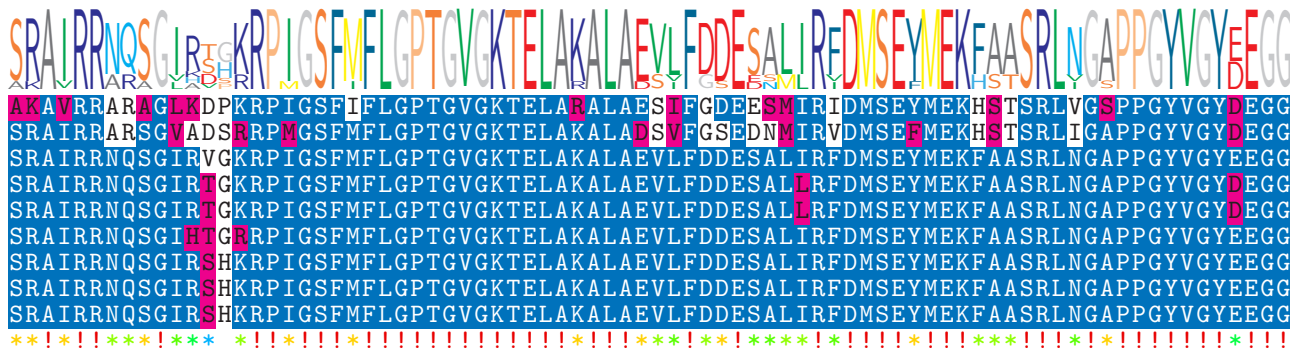


520  
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logo

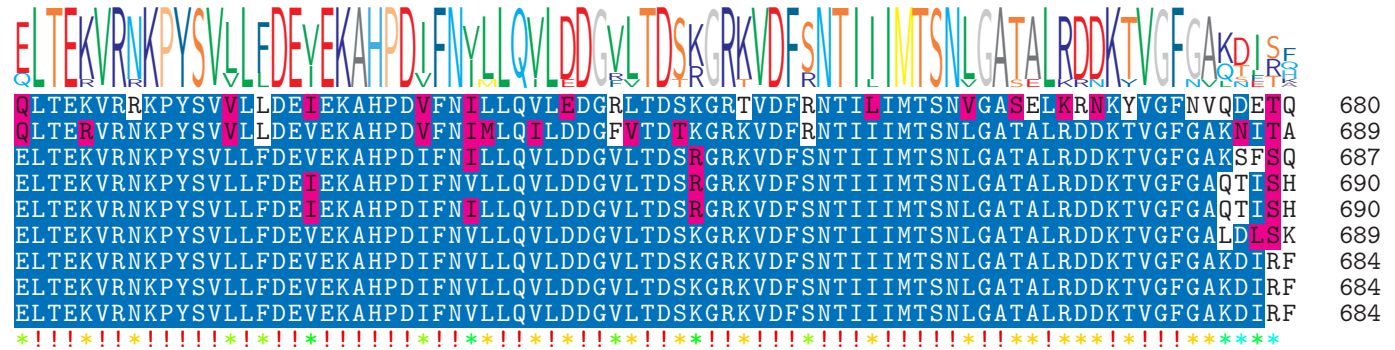
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NTDB id 610 V4T04 RS10165 WP 012897346.1  
NTDB id 377 SMU RS09275 WP 002262344.1  
NTDB id 329 STU RS10020 WP 011225298.1  
NTDB id 297 STER RS00545 WP 011680614.1  
NTDB id 1129414 GPW48 RS09530 WP 074390078.1  
NTDB id 287 SP RS11210 WP 001109712.1  
NTDB id 290 KZH43 RS10025 WP 001109677.1  
NTDB id 289 SPD RS10700 WP 001109677.1

consensus



600  
609  
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604

```
NTDB id 85 BSU 00860 NP 387967.1
NTDB id 610 V4T04 RS10165 WP 012897346.1
NTDB id 377 SMU RS09275 WP 00226344.1
NTDB id 329 STU RS10020 WP 011225298.1
NTDB id 297 STER RS00545 WP 011680614.1
NTDB id 1129414 GPW48 RS09530 WP 074390078.1
NTDB id 287 SP RS11210 WP 001109712.1
NTDB id 290 KZH43 RS10025 WP 001109677.1
NTDB id 289 SPD RS10700 WP 001109677.1
consensus
```



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NTDB id 85 BSU 00860 NP 387967.1
NTDB id 610 V4T04 RS10165 WP 012897346.1
NTDB id 377 SMU RS09275 WP 00226344.1
NTDB id 329 STU RS10020 WP 011225298.1
NTDB id 297 STER RS00545 WP 011680614.1
NTDB id 1129414 GPW48 RS09530 WP 074390078.1
NTDB id 287 SP RS11210 WP 001109712.1
NTDB id 290 KZH43 RS10025 WP 001109677.1
NTDB id 289 SPD RS10700 WP 001109677.1
consensus
```



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NTDB id 85 BSU 00860 NP 387967.1
NTDB id 610 V4T04 RS10165 WP 012897346.1
NTDB id 377 SMU RS09275 WP 00226344.1
NTDB id 329 STU RS10020 WP 011225298.1
NTDB id 297 STER RS00545 WP 011680614.1
NTDB id 1129414 GPW48 RS09530 WP 074390078.1
NTDB id 287 SP RS11210 WP 001109712.1
NTDB id 290 KZH43 RS10025 WP 001109677.1
NTDB id 289 SPD RS10700 WP 001109677.1
consensus

```



|   |                       |
|---|-----------------------|
| X | non conserved         |
| X | similar               |
| X | $\geq 50\%$ conserved |