```
logo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
NTDB id 450 SPYM18 RS08475 WP 011018214.1       MSCCFFVVLFILGIVKKKRRLKMSIETRAAFEKVKPIILKLKRHYYIQLWDRDDWLQEGHIILLQLLERYPELIEEEERL    80
NTDB id 449 SPYM18 RS01395 WP 011018214.1       MSCCFFVVLFILGIVKKKRRLKMSIETRAAFEKVKPIILKLKRHYYIQLWDRDDWLQEGHIILLQLLERYPELIEEEERL    80
NTDB id 442 SPYM3 RS08515 WP 011106595.1        MSCCFFVVLFILGIVKKKRRLKMSIETRAVFEKVKPIILKLKRHYYIQLWDRDDWLQEGHIILLQLLERYPELIEEEERL    80
NTDB id 441 SPYM3 RS01385 WP 011106595.1        MSCCFFVVLFILGIVKKKRRLKMSIETRAVFEKVKPIILKLKRHYYIQLWDRDDWLQEGHIILLQLLERYPELIEEEERL    80
NTDB id 448 SpyM6JRS4 RS07800 WP 010921894.1   MSCCFFVVLFILGIVKKKRRLKMSIETRAAFEKVKPIILKLKRHYYIQLWDRDDWLQEGHIILLQLLERYPELIEEEERL    80
NTDB id 447 SpyM6JRS4 RS01370 WP 010921894.1   MSCCFFVVLFILGIVKKKRRLKMSIETRAAFEKVKPIILKLKRHYYIQLWDRDDWLQEGHIILLQLLERYPELIEEEERL    80
NTDB id 44 SMU RS09085 WP 002263585.1           .......................MEEDFEIVFNKVKPIVWKLSRYYFIKMWTREDWQQEGMLILHQLLREHPELEEDDTKL    58
NTDB id 457 SSUD9 RS00080 WP 002936602.1        ........................MEFEKVYASVKGIVNKARKEFYIKLWDRDDWEQEGMMTLFELLEAQPWLVDEQVQL    56
NTDB id 461 GPW51 RS00080 WP 011921639.1        ........................MEFEKVYASVKGIVNKARKEFYIKLWDRDDWEQEGMMTLFELLEAQPWLVDEQVQL    56
NTDB id 454 SSU RS00080 WP 011921639.1          ........................MEFEKVYASVKGIVNKARKEFYIKLWDRDDWEQEGMMTLFELLEAQPWLVDEQVQL    56
NTDB id 424 SGO RS10430 WP 012130755.1          ........................MKFEDVYKQVEGIVKRCYKDYYLHLWEYADWRQEGMLVLYELLKSHPNLLEDQPRL    56
NTDB id 423 SGO RS08370 WP 012130755.1          ........................MKFEDVYKQVEGIVKRCYKDYYLHLWEYADWRQEGMLVLYELLKSHPNLLEDQPRL    56
NTDB id 141 SP RS10155 WP 000588925.1           ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWEQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 140 SP RS00070 WP 000588925.1           ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWEQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 58022 SPN034156 RS04740 WP 000588873.1  ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWDQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 252 KZH43 RS09050 WP 000588897.1        ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWDQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 251 KZH43 RS09050 WP 000588897.1        ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWDQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 211 SPD RS09675 WP 000588897.1          ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWDQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 210 SPD RS00065 WP 000588897.1          ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWDQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 177 SPR RS09210 WP 000588897.1          ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWDQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 176 SPR RS00065 WP 000588897.1          ........................MIKELYEEVQGTVYKCRNEYYLHLWELSDWDQEGMLCLHELISREEGLVDDIPRL    55
NTDB id 488 SM12261 RS00065 WP 000471939.1      ........................MFKELYEEVQGIVYKCRNEYHLHLWELSDWDQEGMICLHELISREEGIVEDIPRL    55
NTDB id 489 SM12261 RS01070 WP 000471940.1      ........................MFKELYEEVQGIVYKCRNEYYLHLWELSDWDQEGMICLHELISREEELVEDIPRL    55
NTDB id 517 SMSK321 RS10700 WP 000471945.1      ........................MFKELYKEVQGIVYKSRNEYYLHLWELSDWDQEGMICLHELISREEELVEDIPRL    55
NTDB id 516 SMSK321 RS09125 WP 000471944.1      ........................MFKELYKEVQGIVYKSRNEYYLHLWELSDWDQEGMICLHELISKEEELAEDIPRL    55
consensus                                       * ******!**************!***!!*!!!***!**!***** *******!
```

```
logo                                                  RkYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSGE
                                                      YRYFKTKFSSYLKDLLRRQESQKRQFHKLAYEEIGEVAHAIPSRGLWLDDYVAYQEVIASLENQLNSQERMQFKALIRGE
NTDB id 450 SPYM18 RS08475 WP 011018214.1             YRYFKTKFSSYLKDLLRRQESQKRQFHKLAYEEIGEVAHAIPSRGLWLDDYVAYQEVIASLENQLNSQERMQFKALIRGE   160
NTDB id 449 SPYM18 RS01395 WP 011018214.1             YRYFKTKFSSYLKDLLRRQESQKRQFHKLAYEEIGEVAHAIPSRGLWLDDYVAYQEVIASLENQLNSQERMQFKALIRGE   160
NTDB id 442 SPYM3 RS08515 WP 011106595.1              YRYFKTKFSSYLKDLLRRQESQKRQFHKLAYEEIGEVAHAIPSRGLWLDDYVAYQEVIASLENQLNSQERMQFQALIRGE   160
NTDB id 441 SPYM3 RS01385 WP 011106595.1              YRYFKTKFSSYLKDLLRRQESQKRQFHKLAYEEIGEVAHAIPSRGLWLDDYVAYQEVIASLENQLNSQERMQFQALIRGE   160
NTDB id 448 SpyM6JRS4 RS07800 WP 010921894.1         YRYFKTKFSSYLKDLLRRQESQKRQFHKLAYEEIGEVAHAIPSRGLWLDDYVAYQEVIASLENQLNSQERMQFQALIRGE   160
NTDB id 447 SpyM6JRS4 RS01370 WP 010921894.1         YRYFKTKFSSYLKDLLRRQESQKRQFHKLAYEEIGEVAHAIPSRGLWLDDYVAYQEVIASLENQLNSQERMQFQALIRGE   160
NTDB id 44 SMU RS09085 WP 002263585.1                 YIYFKTRFSNYIKDVLRQQESQKRRFNRMSYEEVGEIEHCLSSGGMQLDEYILFRDSLLAYKQGLSTEKQELFERLVAGE   138
NTDB id 457 SSUD9 RS00080 WP 002936602.1              YCYFKVKFRNRIKDRIRKQESQKRKFDRMPHEDIHELSHAIQSPGLINDELLMLRGALRDYRKNLSNDQLDKYEKLISGQ   136
NTDB id 461 GPW51 RS00080 WP 011921639.1              YCYFKVKFRNRIKDRIRKQESQKRKFDRMPHEDIYELSHAIQSPGLINDELLMLRGALRDYRKNLSNDQLDKYEKLISGQ   136
NTDB id 454 SSU RS00080 WP 011921639.1                YCYFKVKFRNRIKDRIRKQESQKRKFDRMPHEDIYELSHAIQSPGLINDELLMLRGALRDYRKNLSNDQLDKYEKLISGQ   136
NTDB id 424 SGO RS10430 WP 012130755.1                YRYFKTKFRNRIHDLIRRQESQKRKLDRQPYEEVSEIGHRLRMKELYLDELVAFRSAMSEYRSRLSPEEAKQYERLMADE   136
NTDB id 423 SGO RS08370 WP 012130755.1                YRYFKTKFRNRIHDLIRRQESQKRKLDRQPYEEVSEIGHRLRMKELYLDELVAFRSAMSEYRSRLSPEEAKQYERLMADE   136
NTDB id 141 SP RS10155 WP 000588925.1                 RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 140 SP RS00070 WP 000588925.1                 RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 58022 SPN034156 RS04740 WP 000588873.1        RKYFKTKFRNRILDYIRKQESQKRKYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 252 KZH43 RS09050 WP 000588897.1              RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 251 KZH43 RS09050 WP 000588897.1              RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 211 SPD RS09675 WP 000588897.1                RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 210 SPD RS00065 WP 000588897.1                RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 177 SPR RS09210 WP 000588897.1                RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 176 SPR RS00065 WP 000588897.1                RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGLWLDDYYLFHETLRDYRNKQSKEKQEELERVLSNE   135
NTDB id 488 SM12261 RS00065 WP 000471939.1            RKYFKTKFRNRILDYIRKQESQKRRYDKEPYEEVGEISHRISEGGMWLDEYYLFHETLRDYRNKQSKDKQEELERVLRHE   135
NTDB id 489 SM12261 RS01070 WP 000471940.1            RKYFKTKFRNRILDHIRKQESQKRRYDKEPYEEVGEISHRISEGGMWLDEYYLFHETLRDYRNKQSKDKQEELERVLRHE   135
NTDB id 517 SMSK321 RS10700 WP 000471945.1            RKYFKTKFRNRILDYIRKQESQKRRYDKEAYEEVGEISHRIGEGGLWLDDYYLFHETLRDYRSKQSKDKQEELERVLRHE   135
NTDB id 516 SMSK321 RS09125 WP 000471944.1            RKYFKTKFRNRILDYIRKQESQKRRYDKESYEEVGEISHRIGEGGLWLDEYYLFHETLRDYRSKQSKDKQEELERVLRHE   135
consensus                                             **!!!**!*****! *!*!!!!!!*******!***!**!** ******!***************************  *
```

```
logo                                                  RFRGRQRVLRDLRIVFKEFTIRTH
NTDB id 450 SPYM18 RS08475 WP 011018214.1             RFKGRRALLRKISPYFKEFAQQL.   183
NTDB id 449 SPYM18 RS01395 WP 011018214.1             RFKGRRALLRKISPYFKEFAQQL.   183
NTDB id 442 SPYM3 RS08515 WP 011106595.1              RFKGRRALLRKISPYFKEFAQQL.   183
NTDB id 441 SPYM3 RS01385 WP 011106595.1              RFKGRRALLRKISPYFKEFAQQL.   183
NTDB id 448 SpyM6JRS4 RS07800 WP 010921894.1          RFKGRRALLRKISPYFKEFAQQL.   183
NTDB id 447 SpyM6JRS4 RS01370 WP 010921894.1          RFKGRRALLRKISPYFKEFAQQL.   183
NTDB id 44 SMU RS09085 WP 002263585.1                 HFLGRQSMLKDLRKKLSDFKEK..   160
NTDB id 457 SSUD9 RS00080 WP 002936602.1              CFNGRREMIRDLQIHLKDFR....   156
NTDB id 461 GPW51 RS00080 WP 011921639.1              CFNGRREMIRDLQIHLKDFR....   156
NTDB id 454 SSU RS00080 WP 011921639.1                CFNGRREMIRDLQIHLKDFR....   156
NTDB id 424 SGO RS10430 WP 012130755.1                RFKGRKAMLKDLSYHLRDFNPRLD   160
NTDB id 423 SGO RS08370 WP 012130755.1                RFKGRKAMLKDLSYHLRDFNPRLD   160
NTDB id 141 SP RS10155 WP 000588925.1                 RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 140 SP RS00070 WP 000588925.1                 RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 58022 SPN034156 RS04740 WP 000588873.1        RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 252 KZH43 RS09050 WP 000588897.1              RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 251 KZH43 RS09050 WP 000588897.1              RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 211 SPD RS09675 WP 000588897.1                RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 210 SPD RS00065 WP 000588897.1                RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 177 SPR RS09210 WP 000588897.1                RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 176 SPR RS00065 WP 000588897.1                RFRGRQRVLRDLRIVFKEFTIRTH   159
NTDB id 488 SM12261 RS00065 WP 000471939.1            RFRGRQRVLRDLRIVFKEFDIRTH   159
NTDB id 489 SM12261 RS01070 WP 000471940.1            RFRGRQRVLRDLRIVFKEFDIRTH   159
NTDB id 517 SMSK321 RS10700 WP 000471945.1            RFRGRQRVLRDLRIVFKEFDIRTQ   159
NTDB id 516 SMSK321 RS09125 WP 000471944.1            RFRGRQRVLRDLRIVFKEFDIRTR   159
consensus                                             *!*!!*************! ***
```

X non conserved

X similar

X $\geq 50\%$ conserved