

Muscle Results

Results of search	
Number of sequences	9
Sequence type	Amino
Muscle version	MUSCLE v3.6 by Robert C. Edgar
Max length	1426
Average length	825
Output file	muscle-20061207-05070215.output (clustalw)
Your input file	muscle-20061207-05070215.input
SUBMIT ANOTHER JOB	

Alignment

Hide Colors

MUSCLE (3.6) multiple sequence alignment

```
YlbH -----
YibS -----
YibJ -----
RhsD MSGKPAARQGDMTQYGGPIVQGSAGVRI GAPTGVACSVCPGGMTSGNPVNPLLGA KVLPG
RhsE -----
YbfO -----
RhsC MSGKPAARQGDMTQYGGSI VQGSAGVRI GAPTGVACSVCPGGVTS GHPVNPLLGA KVLPG
RhsA MSGKPAARQGDMTQYGGSI VQGSAGVRI GAPTGVACSVCPGGVTS GHPVNPLLGA KVLPG
RhsB MSGKPAARQGDMTQYGGSI VQGSAGVRI GAPTGVACSVCPGGVTS GHPVNPLLGA KVLPG
```

```
YlbH -----
YibS -----
YibJ -----
RhsD ETDLALPGLPFILSR TYSSYR TKTPAPVGV FGPWKAPSDIRLQLR DDGLILNDNGGRS
RhsE -----
YbfO -----
RhsC ETDIALPGLPFILSR TYSSYR TKTPAPVGS LGPGWKMPADIRLQLR DNTLILSDNGGRS
RhsA ETDIALPGLPFILSR TYSSYR TKTPAPVGS LGPGWKMPADIRLQLR DNTLILSDNGGRS
RhsB ETDIALPGLPFILSR TYSSYR TKTPAPVGS LGPGWKMPADIRLQLR DNTLILSDNGGRS
```

```
YlbH -----
YibS -----
YibJ -----
RhsD IHFPELLPGEAVYSRSE SMWLVRGGKAAQPDGHTLARLWGALPPDIRLSPHLYLATNSAQ
RhsE -----
YbfO -----
RhsC LYFEHLFPGEDGYSRSE SLWLVRGGVAKLDEGHRLAALWQALPEELRLSPHRYLATNSPQ
RhsA LYFEHLFPGEDGYSRSE SLWLVRGGVAKLDEGHRLAALWQALPEELRLSPHRYLATNSPQ
RhsB LYFEHLFPGEDGYSRSE SLWLVRGGVAKLDEGHRLAALWQALPEELRLSPHRYLATNSPQ
```

YlbH -----
YibS -----
YibJ -----
RhsD GPWWILGWSE^RVPGAEDVLPAPLPPY^RVL^TGMADR^FGRT^LTY^RREAAGDLAGEITGV^TDG
RhsE -----
YbfO -----
RhsC GPWWLLGWCE^RVP^EAEDEVLPAPLPPY^RVL^TGLVDR^FGRT^QT^FHREAAG^FFSGEITGV^TDG
RhsA GPWWLLGWCE^RVP^EAEDEVLPAPLPPY^RVL^TGLVDR^FGRT^QT^FHREAAG^FFSGEITGV^TDG
RhsB GPWWLLGWCE^RVP^EAEDEVLPAPLPPY^RVL^TGLVDR^FGRT^QT^FHREAAG^FFSGEITGV^TDG

YlbH -----
YibS -----
YibJ -----
RhsD AGREFR^LVL^TTQAQ^RAE^EARTSS^LSSSDSS^RPLSASAFPDTLPG-TEYGPDRGIRLSAVW
RhsE -----
YbfO -----
RhsC AGRHFR^LVL^TTQAQ^RAE^EARQQ^AISGGTEP-----SAFPDTLPGYTEYGRDNGIRLSAVW
RhsA AWRHFR^LVL^TTQAQ^RAE^EARQQ^AISGGTEP-----SAFPDTLPGYTEYGRDNGIRLSAVW
RhsB AWRHFR^LVL^TTQAQ^RAE^EARQQ^AISGGTEP-----SAFPDTLPGYTEYGRDNGIRLSAVW

YlbH -----
YibS -----
YibJ -----
RhsD LMHDPAYPESLPAAPLVR^YTYTEAGELLAVYDRSNTQVRAF^TYDAQHPGRMVAHRYAGRP
RhsE -----
YbfO -----
RhsC LTHDPEYPENLPAAPLVR^YGWTPR^GELAAVYDRSNTQVRS^FTYDDKY^RGRMVAHRHTGRP
RhsA LTHDPEYPENLPAAPLVR^YGWTPR^GELAVVYDRSG^KQVRS^FTYDDKY^RGRMVAHRHTGRP
RhsB LTHDPEYPENLPAAPLVR^YGWTPR^GELAVVYDRSG^KQVRS^FTYDDKY^RGRMVAHRHTGRP

YlbH -----
YibS -----
YibJ -----
RhsD EMRYRYDDTGRVVEQLNPAGLSY^RYLYEQDRITV^TDSLNRREVLHTEGGAGLKR^VVKKE
RhsE -----
YbfO -----
RhsC EICYRYDSDGRVTEQLNPAGLSY^TYQYE^KDRITIT^ITDSLNRREVLHTQEGGLKR^VVKKEH
RhsA EIRYRYDSDGRVTEQLNPAGLSY^TYQYE^KDRITIT^ITDSLDRREVLHTQGEAGLKR^VVKKEH
RhsB EIRYRYDSDGRVTEQLNPAGLSY^TYQYE^KDRITIT^ITDSLDRREVLHTQGEAGLKR^VVKKEH

YlbH -----
YibS -----
YibJ -----
RhsD ADGSVTRSGYDAAGRLTAQTDAAGR^TTEYGLNVVSGDITDITTPDGRETKFYNDGNQLT
RhsE -----
YbfO -----
RhsC ADGSV^TQSQF^DAVGRLRAQTDAAGR^TTEYSPDVVTGLITRITTPDGRASAFYYNHHSQLT
RhsA ADGSV^TQSQF^DAVGRLRAQTDAAGR^TTEYSPDVVTGLITRITTPDGRASAFYYNHNNQLT
RhsB ADGSV^TQSQF^DAVGRLRAQTDAAGR^TTEYSPDVVTGLITRITTPDGRASAFYYNHNNQLT

YlbH -----
YibS -----
YibJ -----
RhsD AVVSPDGLERREYDEP^RLVSE^TRSGETVRYRYDDAHS^ELPATTTDATGSTRQMTWSR
RhsE -----
YbfO -----
RhsC SATGPDGLEIRREYDEW^RL^IQETAPDGDITRYRYDNPHSDLPCATEDATGSRK^TM^TWSR
RhsA SATGPDGLELRREYDEL^GR^LI^QETAPDGDITRYRYDNPHSDLPCATEDATGSRK^TM^TWSR
RhsB SATGPDGLELRREYDEL^GR^LI^QETAPDGDITRYRYDNPHSDLPCATEDATGSRK^TM^TWSR

YlbH -----
YibS -----
YibJ -----
RhsD YGQLLAFTDCSGYQ^TRYEYDR^FGQMTAVHREEGISLYRRYDN^RGRLTSVKDAQGRETRYE
RhsE -----
YbfO -----
RhsC YGQLLSFTDCSGYV^TRYD^HDR^FGQMTAVHREEGLSQYRAYDS^RGQLIAVKDTQGHETRYE
RhsA YGQLLSFTDCSGYV^TRYD^HDR^FGQMTAVHREEGLSQYRAYDS^RGQLIAVKDTQGHETRYE
RhsB YGQLLSFTDCSGYV^TRYD^HDR^FGQMTAVHREEGLSQYRAYDS^RGQLIAVKDTQGHETRYE

YlbH -----
YibS -----
YibJ -----
RhsD YNAAGDLTAVITPDGNR^SETQYDAWGKAVSTTQGG^LTRSM^EYDAAGR^VISL^TNE^NSGSHSV

RhsE -----
YbfO -----
RhsC YNAAGDLTTVIAPDGS R NGTQYDAWGKAI CTTQGGLTRSM EYDAAGRVI RLTS ENGSHTT
RhsA YNIAGDLTAVIAPDGS R NGTQYDAWGKAVR TTQGGLTRSM EYDAAGRVI RLTS ENGSHTT
RhsB YNIAGDLTAVIAPDGS R NGTQYDAWGKAVR TTQGGLTRSM EYDAAGRVI RLTS ENGSHTT

YlbH -----
YibS -----
YibJ -----
RhsD FSYDALDRLVQQGGFDGR TQRVYH YDLTG KLTQSEDEGLVILWYYDESDRITHR TVNGEPA
RhsE -----
YbfO -----
RhsC FRYDVLDRLIQETGFDGR TQRVYH HDLTG KLI RSEDEGLVTHWHYDEADRLTHR TVNGETA
RhsA FRYDVLDRLIQETGFDGR TQRVYH HDLTG KLI RSEDEGLVTHWHYDEADRLTHR TVKGETA
RhsB FRYDVLDRLIQETGFDGR TQRVYH HDLTG KLI RSEDEGLVTHWHYDEADRLTHR TVKGETA

YlbH -----
YibS -----
YibJ -----
RhsD EQWQYDGHGWLTDI SHLSEGH RVAVHYGYDDKGR L TGECQTVENPETGELLWQHETKHAY
RhsE -----LTTLSHTSEGH RVSVHYGYDDKGR L TGERQTVENPETGELLWQHETGHAY
YbfO -----
RhsC ERWQYDERGWLTDI SHISEGHR VTVHYGYDSKGR LASEHLTVHHPQTNELLWQHETR HAY
RhsA ERWQYDERGWLTDI SHISEGHR VAVHYRYDEKGR L TGERQTVHHPQTEALLWQHETR HAY
RhsB ERWQYDERGWLTDI SHISEGHR VAVHYRYDEKGR L TGERQTVHHPQTEALLWQHETR HAY

YlbH -----
YibS -----
YibJ -----
RhsD NEQGLANRVTPDSLPPVEW LTYGSGYLAGMKLGGT PLVEYTRDR L HRET VRSFGSMAGSN
RhsE NEQGLANRVTPDSLPPVEW LTYGSGYLAGMKLGGT PLLEFTRDR L HRET VRSFGSMAGSN
YbfO -----
RhsC NAQGLANRCIPDSLPAVEW LTYGSGWLSGMKLGDT PLVEYTRDR L HRET LRSFGR-----
RhsA NAQGLANRCIPDSLPAVEW LTYGSGYLAGMKLGD TPLVEYTRDR L HRET LRSFGR-----
RhsB NAQGLANRCIPDSLPAVEW LTYGSGYLAGMKLGD TPLVEYTRDR L HRET LRSFGR-----

YlbH -----
YibS -----
YibJ -----
RhsD AAYELTSTYTPAGQLQS QHLNSLVYDRD YGWS DNGDLVRI SGPRQTREYGY SATGRLESV
RhsE AAYKLTSTYTPAGQLQS QHLNSLVYDRD YGWN DNGDLVRI SGPRQTREYGY SATGRLESV
YbfO -----
RhsC --YELTTAYTPAGQLQS QHLNSLLSDRD YTWNDNGELIRI SSSPRQTRS YSYSTTGRLTGV
RhsA --YELTTAYTPAGQLQS QHLNSLLSDRD YTWNDNGELIRI SSSPRQTRS YSYSTTGRLTGV
RhsB --YELTTAYTPAGQLQS QHLNSLLSDRD YTWNDNGELIRI SSSPRQTRS YSYSTTGRLTGV

YlbH -----
YibS -----
YibJ -----
RhsD RTLAPDLDIRIPYATDPAGNRLDPPELHPDSTLTVWPDNR IAEDAHYVYRHDEYGR L TEK
RhsE RTLAPDLDIRIPYATDPAGNRLDPPELHPDSTLTVWPDNR IAEDAHYVYRHDEYGR L TEK
YbfO -----NLGIDIPYATDPAGNRLDPPELHPDSTLSM WPDNR IARDAHYLYRYDRHGRLTEK
RhsC HTTAAANLDIRIPYATDPAGNRLDPPELHPD SALS M WPDNR IARDAHYLYRYDRHGRLTEK
RhsA HTTAAANLDIRIPYATDPAGNRLDPPELHPDSTLSM WPDNR IARDAHYLYRYDRHGRLTEK
RhsB HTTAAANLDIRIPYATDPAGNRLDPPELHPDSTLSM WPDNR IARDAHYLYRYDRHGRLTEK

YlbH -----
YibS -----
YibJ -----
RhsD TDRIPAGVIRTD DERTHHYHYDSQHRLV FYTRI QHGEPLVESRYLYDPLGRRMAKR VWR
RhsE TDRIPAGVIRTD DERTHHYHYDSQHRLV FYTRI QHGEPLVESRYLYDPLGRRMAKR VWR
YbfO TDLIPEGVIRTD DERTHRYHYDSQHRLVHYTRTQYAEPLVESRYLYDPLGRRVAKR VWR
RhsC TDLIPEGVIRTD DERTHRYHYDSQHRLVHYTRTQYAEPLVESRYLYDPLGRRVAKR VWR
RhsA TDLIPEGVIRTD DERTHRYHYDSQHRLVHYTRTQYEEPLVESRYLYDPLGRRVAKR VWR
RhsB TDLIPEGVIRTD DERTHRYHYDSQHRLVHYTRTQYEEPLVESRYLYDPLGRRVAKR VWR

YlbH -----
YibS -----
YibJ -----
RhsD ERDLTGWMSLSRKPEVTWY GWDGDR LTTVQTD TTRIQT VYEPGSFTPLIRVETENGEREK
RhsE ERDLTGWMSLSRKPEVTWY GWDGDR LTTVQTD TTRIQT VYEPGSFTPLIRVETENGEREK
YbfO ERDLTGWMSLSRKPPQVTWY GWDGDR LTTIQNDRTRIQT IYQPGSFTPLIRVETATGELAK
RhsC ERDLTGWMSLSRKPPQVTWY GWDGDR LTTIQNDRTRIQT IYQPGSFTPLIRVETATGELAK
RhsA ERDLTGWMSLSRKPPQVTWY GWDGDR LTTIQNDRTRIQT IYQPGSFTPLIRVETATGELAK
RhsB ERDLTGWMSLSRKPPQVTWY GWDGDR LTTIQNDRSRIQT IYQPGSFTPLIRVETATGELAK

YlbH -----
 YibS -----
 YibJ -----
 RhsD -----
 RhsE -----
 YbfO -----
 RhsC -----
 RhsA -----
 RhsB -----

```

-----MQLDRLESEILADRVSEESRRWLASCGLTVEQ
AQRRLAETLQQEGSENGHGVPVPAELVRLDRLEEEIRADRVSSERAWLAQCGLTVEQ
AQRRLAETLQQEGSENGHGVPVPAELVRLDRLEEEIRADRVSSERAWLAQCGLTVEQ
TQRRLADTLQQSGGEDGGSVVFPPVLVQMLDRLESEILADRVSEESRRWLASCGLTVEQ
TQRRLADTLQQSGGEDGGSVVFPPVLVQMLDRLESEILADRVSEESRRWLASCGLTVAQ
TQRRLADALQQSGGEDGGSVVFPPVLVQMLDRLESEILADRVSEESRRWLASCGLTVEQ
TQRRLADALQQSGGEDGGSVVFPPVLVQMLDRLESEILADRVSEESRRWLASCGLTVEQ

```

YlbH -----
 YibS -----
 YibJ -----
 RhsD -----
 RhsE -----
 YbfO -----
 RhsC -----
 RhsA -----
 RhsB -----

```

-----LALMDADGNIAWSGEYDEWGNQLNEENPHHLHQF
-----KQXF
MKNQMDPVYTPARKIHLYHCDHRGLPLALISTEGATAWCAEYDEWGNLLSDENPHHLQQL
LARQVEPEYTPARKAHLYHCDHRGLPLALISEDGNTAWSAEYDEWGNQLNEENPHHVQP
LARQVEPEYTPARKVHFYHCDHRGLPLALISEDGNTAWRGEYDEWGNQLNEENPHHLHQF
MQNQMDPVYTPARKIHLYHCDHRGLPLALVSTEGATEWCAEYDEWGNLLNEENPHQLQQL
MQSQMDPVYTPARKIHLYHCDHRGLPLALISTEGTTAWYAEYDEWGNLLNEENPHQLQQL
MQNQMDPVYTPARKIHLYHCDHRGLPLALISKEGTEWCAEYDEWGNLLNEENPHQLQQL
MQNQMDPVYTPARKIHLYHCDHRGLPLALISTEGATAWCAEYDEWGNLLNEENPHQLQQL

```

YlbH -----
 YibS -----
 YibJ -----
 RhsD -----
 RhsE -----
 YbfO -----
 RhsC -----
 RhsA -----
 RhsB -----

```

YRLPGQQYDKE SGLYYNRHRYDPLQGRYITQDP IGLGGWSLYAYPLNPVNGIDPLGLS
IRLPQQXYDDESGLYYNYRXXHPQOGRYNTQAPIGLEGRWNFYQYPLNPISGIDPLGIS
IRLPQQYDEESGLYYNRHRYDPLLGRYITQDP IGLKGGWNFYQYPLNPVINVDPQGLV
YRLPGQQHDEESGLYYNRHRYDPLQGRYITQDP MGLKGGWNLYQYPLNPLOQIDPMGLL
YRLPGQQHDEESGLYYNRHRYDPLQGRYITPDP IGLRGGWNMYQYPLNP IQVIDPMGLD
IRLPQQYDEESGLYYNRHRYDPLQGRYITQDP IGLKGGWNFYQYPLNPVQYIDSMGLA
IRLPQQYDEESGLYYNRHRYDPLQGRYITQDP IGLKGGWNFYQYPLNPISNIDPLGLE
IRLPQQYDEESGLYYNRHRYDPLQGRYITQDP IGLKGGWNFYQYPLNPVTNTDPLGL-
IRLPQQYDEESGLYYNRHRYDPLQGRYITQDP IGLKGGWNLYGYQLNPISDIDPLGLS
*** * : * ***** * : * * * * * * * * * * * * * * * * : * * * : * * * :

```

YlbH -----
 YibS -----
 YibJ -----
 RhsD -----
 RhsE -----
 YbfO -----
 RhsC -----
 RhsA -----
 RhsB -----

```

-----PADVALIRRKDQLNHQ-----RAWDLISDTYEDMKRLN-----LGGTDQFFH
-----HLFI
DINLYPESDLIHSVVADEINIPGVFTIGGHGTPTSIESATRSIMTA-----KDLAYLIKPF
-----QTWDDARSGACTGGVCGV-----LSRIIGPSKFDSTAD AALDALKETQNRSLCNDMEY
AIENLSSGGLIYAVSGVPGLI-----AANSITNSAYQFGYDMD--AIVGGAHNGAADAMRH
SKYGH LNNGGYGARPKNPPTPDPSKLPDI AKQLRLPYPIDQASSAPNVFKTFFRALSPYD
-----TLKCIKPLHSMGGTGERSGPDIWG-----NPFY
-----EVFPRPFPLPIPWPKSPAQQQADDNAA--KALTKWVNDTASQRIFD
-----MWEDAKSGACTNGLCGT-----LSAMIGPDKFDSIDSTAYDALNKINSQSI CEDKEF

```

YlbH -----
 YibS -----
 YibJ -----
 RhsD -----
 RhsE -----
 YbfO -----
 RhsC -----
 RhsA -----
 RhsB -----

```

CMAFCRVSKLNDAGVSRSAKGLGYEKEIRDYGLNLF GMYGRKVKLSHSEMIEDNKKDLAV
QHNF-----
DGNYKDGMTVWLFSCNT-----GKGQNSFASXLAKE LHTNVI GPDTLWTWW
SGIVCKDTNGKYFASKAETDNL--RKESYPLKRCPTGTDR--VAAYHTH--GADSHGDYV
CYLMCRMTKTFGSTIA-DVI-----GKNHEAAGDRQGQPAKERIMDLKNNT--
YTLYCRKWVKPNLTCT-PQD-----DSQYPGMDTKTASDYLPQ-----TNW
HQYLCPVDPGKDYTCGGQDQ----RGESKGDGLWGP GKASNDTKEAAGRCDLVETDNscv
SLILNPPGLALDI-----TMIASRGNVADTGTIDRVNDIINDRFW
AGLICKDNDSGRYFSTAPNRGE---RKGSYPFNSPCPNGTEK--VSAYHTH--GADSHGEYW

```

YlbH -----
 YibS -----
 YibJ -----
 RhsD -----
 RhsE -----
 YbfO -----
 RhsC -----
 RhsA -----
 RhsB -----

```

ND-----HGLTSPSTTD--CSDRCSDYINPEHKKTIKALQDAGYLK-----
-----YAFVCFRYTM-----
GRGTNGKLKMDTVLTAPTNLN--SNKDLMAITTKDLGNWITYGSPGHPI SNMQGTPEKPSD
DEFFSSS--DKNLVRSKDNN--LEAFYLA---TPDGRFEALNNKGEYIFIRNSVPGLSSV
-----VGIACGDFSAKCSDACIEKYNTGQLFGLDGIKADNPIKAKQGSDDASNY
P-----TTQLPPGYTC--AEPYLPFDINKPDGPATAGIDDLGELAKMKQRTSRGI
ENCLKGK---FKEVRPRYSV--LPDIFT PINLGLFKNCQDWSNDSLETCKMKCSGNNIGR
SDGKPKD---RCDVLOELID--CGDISAKDAKSTQKAWNCRHSRQSNDKKR-----
DEIFSGK---DEKIVSKDNN--KSFYLG---TPSGNFKAIDNHGKEITNRKGLPNVCRV

```

YlbH -----
 YibS -----
 YibJ -----
 RhsD -----
 RhsE -----
 YbfO -----
 RhsC -----
 RhsA -----
 RhsB -----

```

-----
-----
IR-----
CIPYHD----
-----
RK-----
FIRFVFTGVM
-----
HGNM-----

```

PLEASE NOTE: Showing colors on large alignments is slow.

Hide Colors

[Return to site](#)