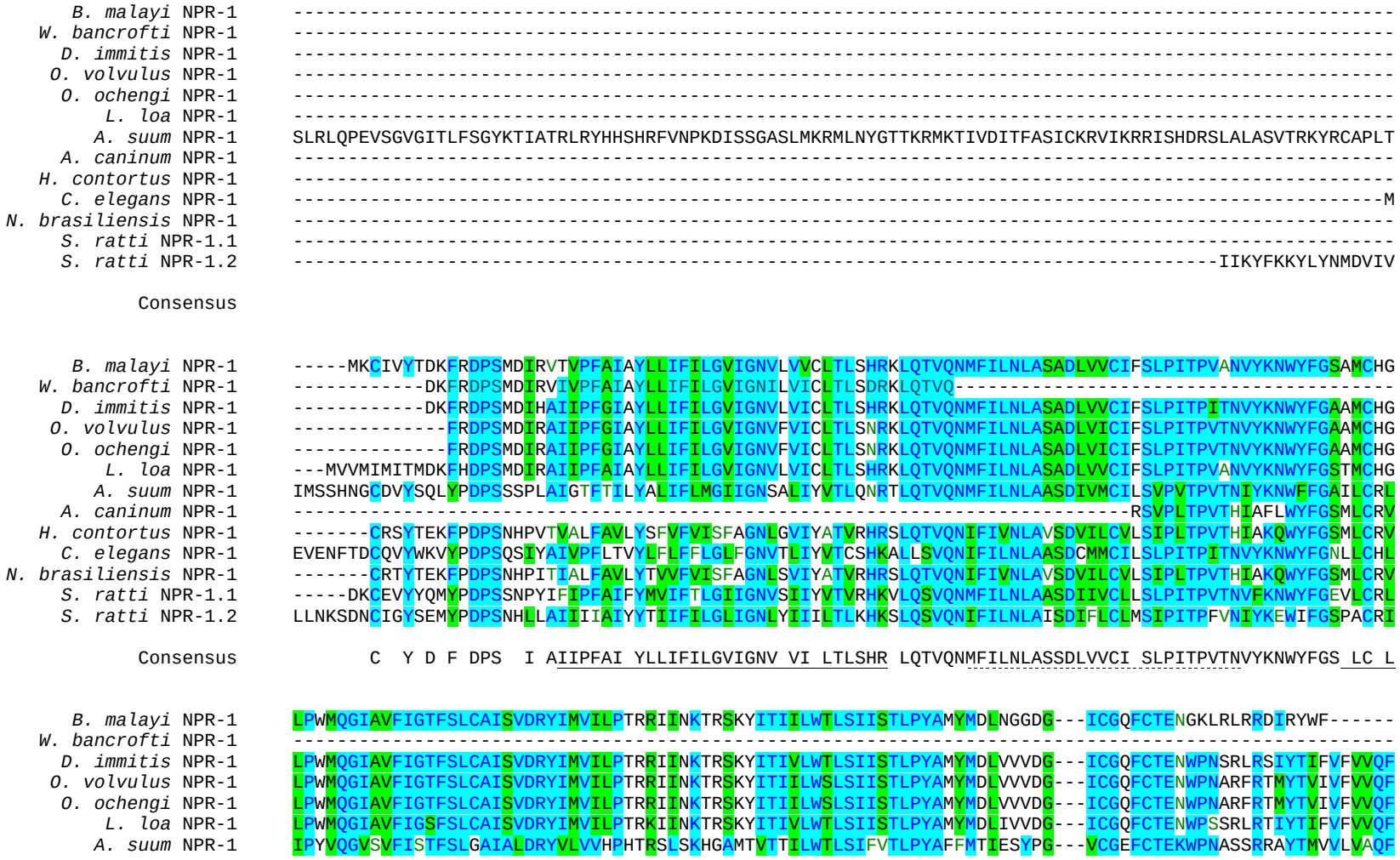
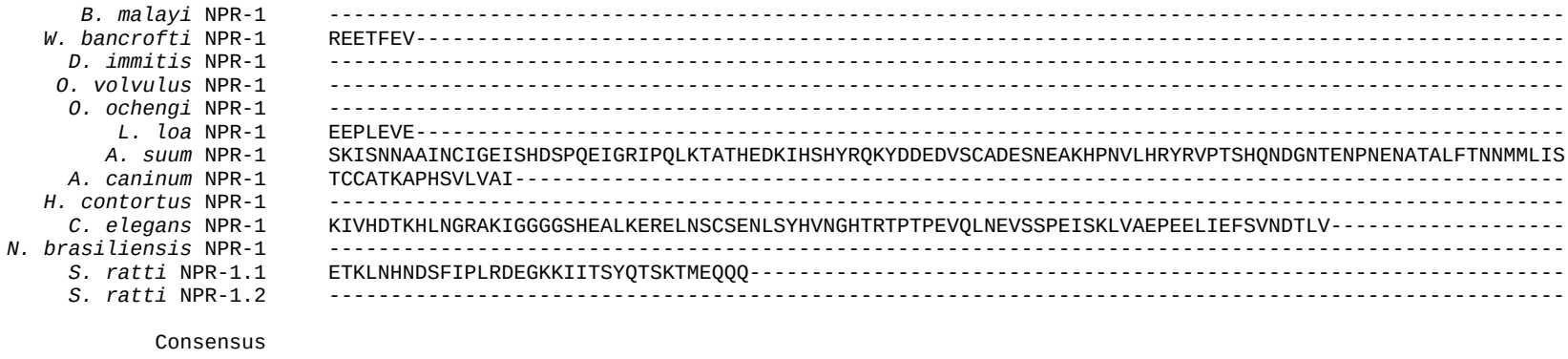
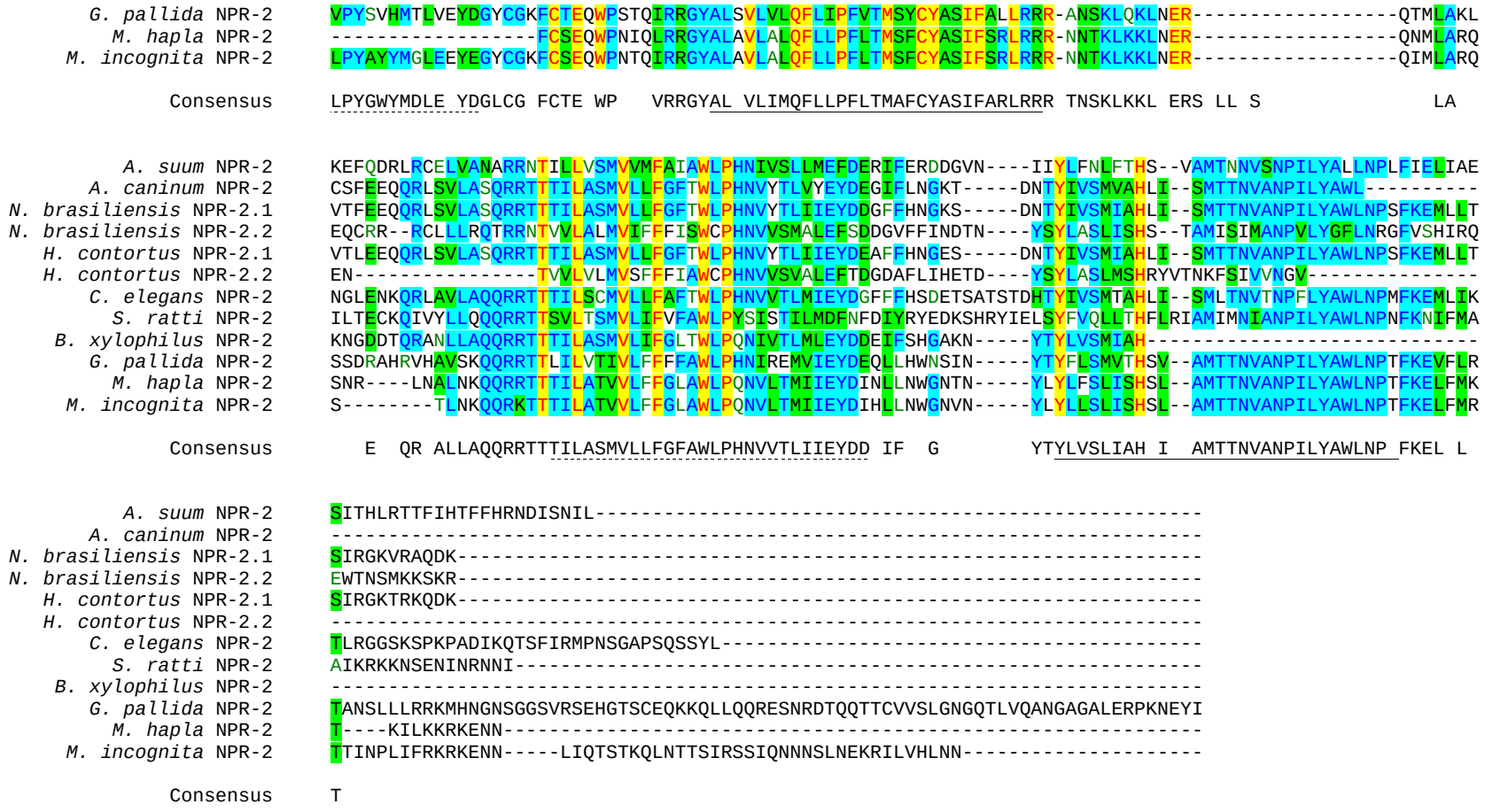
1. NPR-1 homologues



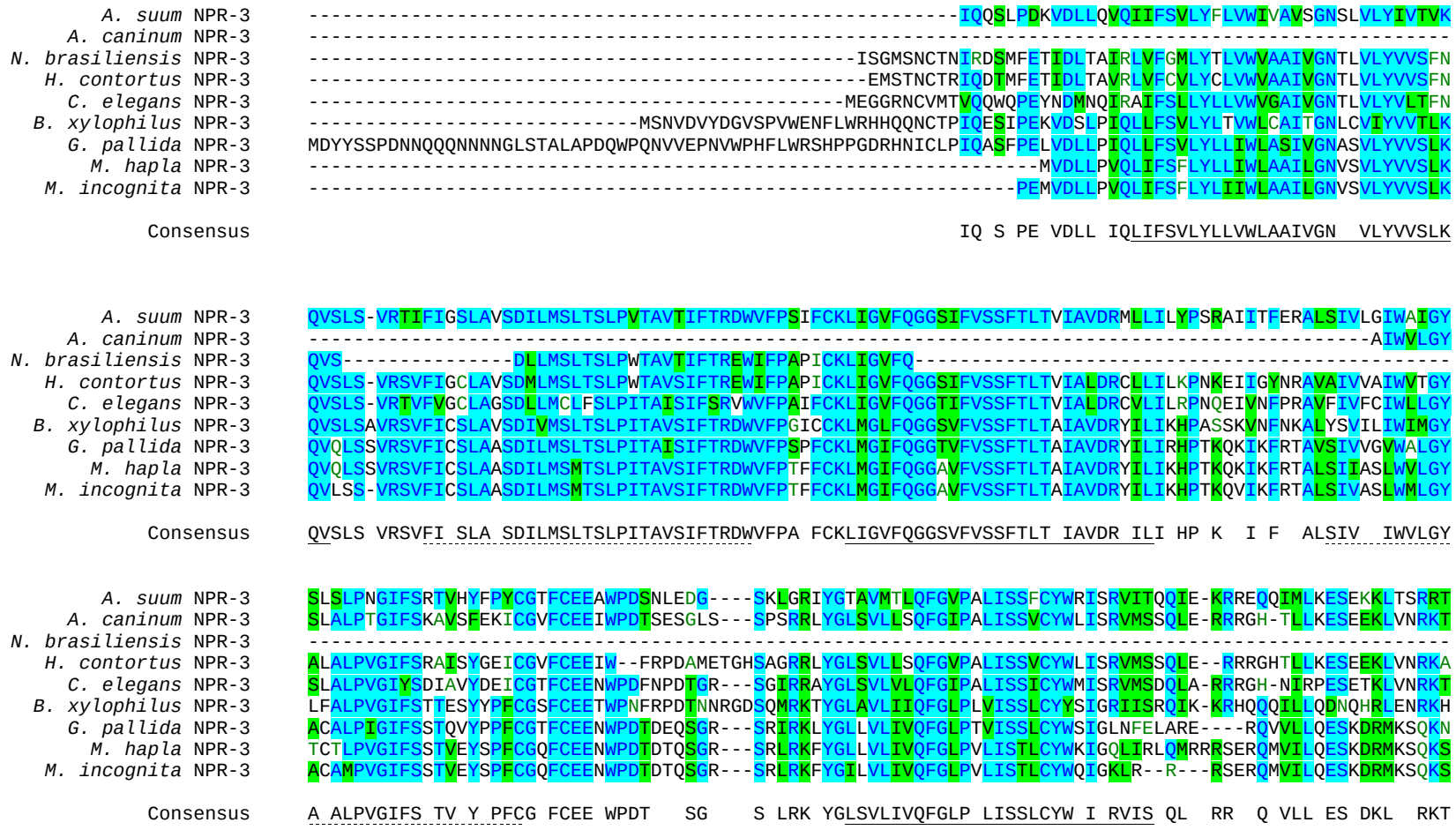

A. caninum NPR-1
H. contortus NPR-1
C. elegans NPR-1
N. brasiliensis NPR-1
S. ratti NPR-1.1
S. ratti NPR-1.2
Consensus
B. malayi NPR-1
W. bancrofti NPR-1
D. immitis NPR-1
O. volvulus NPR-1
O. ochengi NPR-1
L. loa NPR-1
A. suum NPR-1
A. caninum NPR-1
H. contortus NPR-1
C. elegans NPR-1
N. brasiliensis NPR-1
S. ratti NPR-1.1
S. ratti NPR-1.2
Consensus
B. malayi NPR-1
W. bancrofti NPR-1
D. immitis NPR-1
O. volvulus NPR-1
O. ochengi NPR-1
L. loa NPR-1
A. suum NPR-1
A. caninum NPR-1
H. contortus NPR-1
C. elegans NPR-1
N. brasiliensis NPR-1
S. ratti NPR-1.1
S. ratti NPR-1.2
Consensus

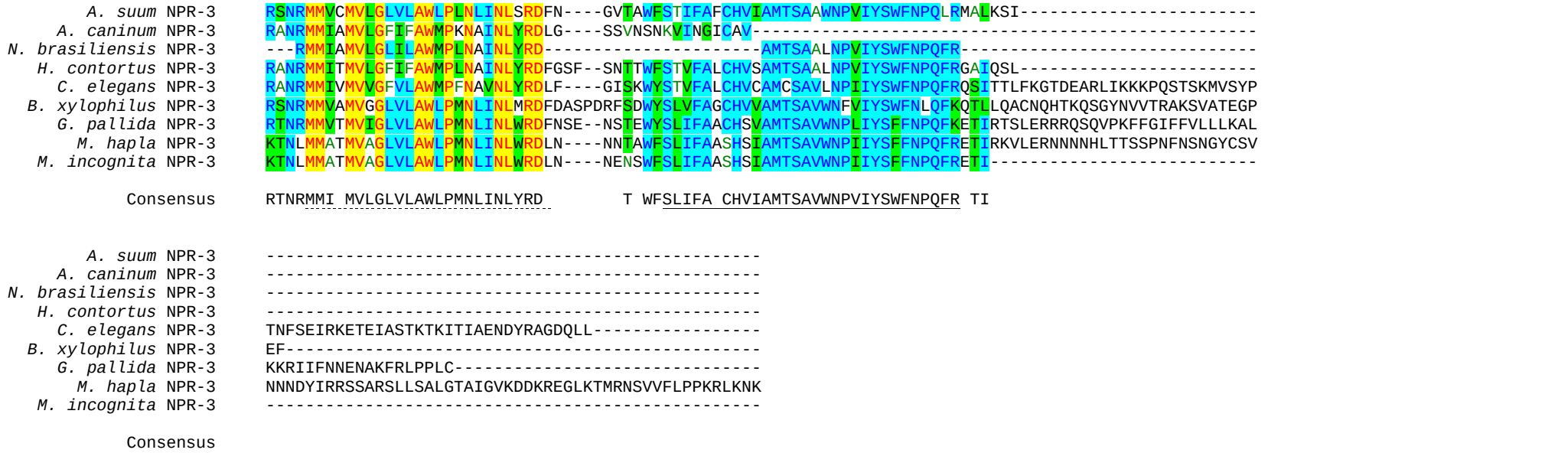

B. malayi NPR-1
W. bancrofti NPR-1
D. immitis NPR-1
O. volvulus NPR-1
O. ochengi NPR-1
L. loa NPR-1
A. suum NPR-1
A. caninum NPR-1
H. contortus NPR-1
C. elegans NPR-1
N. brasiliensis NPR-1
S. ratti NPR-1.1
S. ratti NPR-1.2
REETFEV
EEPLEVE
SKISNNAAINCIGEISHDSPQEIGRIPQLKTATHEDKIHSHYRQKYDDEDVSCADESNEAKHPNVLHRYRVPTSHQNDGNTENPNENATALFTNNMMLIS
TCCATKAPHSVLVAI
KIVHDTKHLNGRAKIGGGGSHEALKERELNSCSENLSYHVNGHTRTPTPEVQLNEVSSPEISKLVAEPEELIEFSVNDTLV
ETKLNHNDSFIPLRDEGKKIITSYQTSKTMEQQQ
Consensus

2. NPR-2 homologues

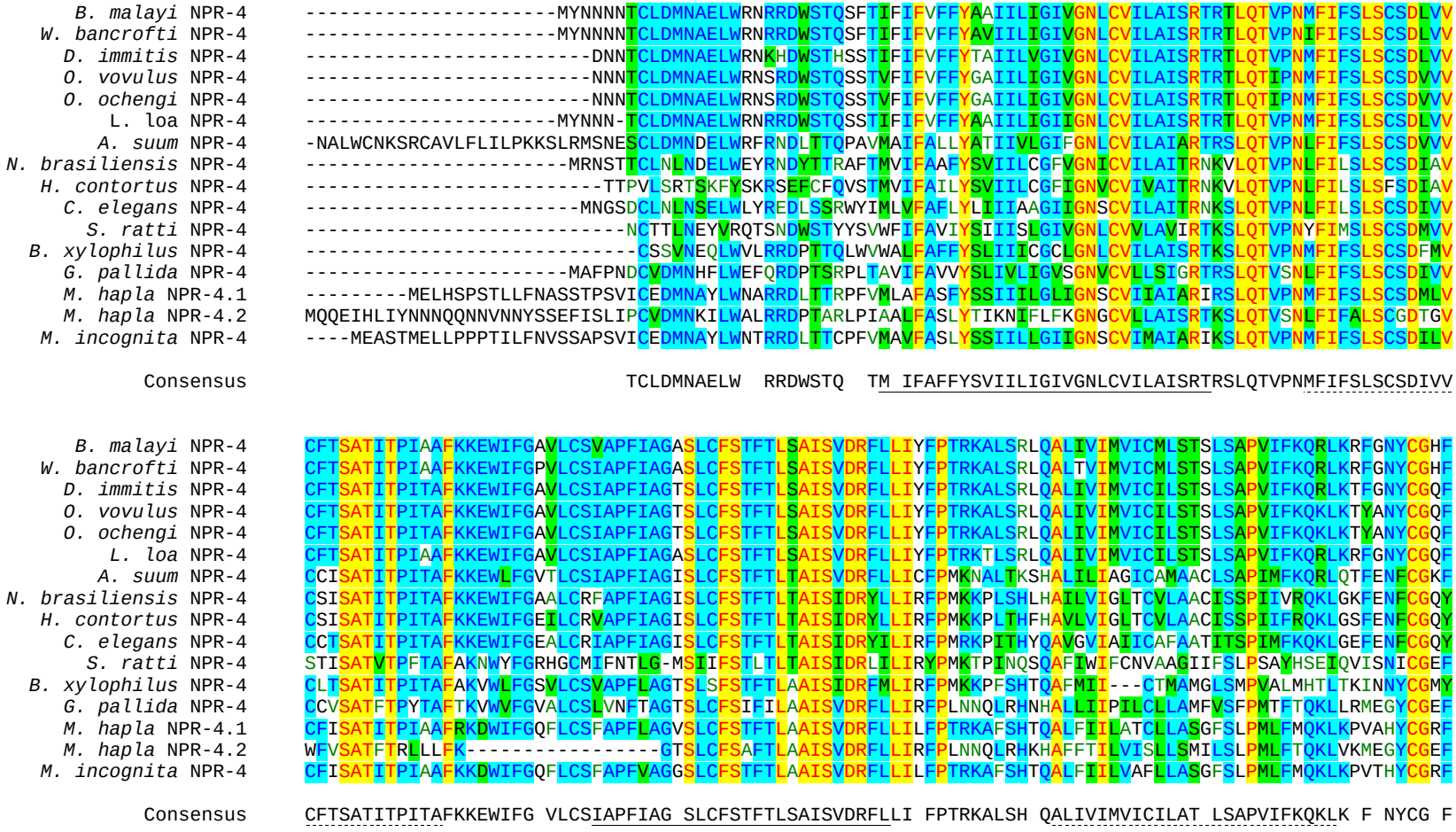

G. pallida NPR-2
M. hapla NPR-2
M. incognita NPR-2
Consensus
A. suum NPR-2
A. caninum NPR-2
N. brasiliensis NPR-2.1
N. brasiliensis NPR-2.2
H. contortus NPR-2.1
H. contortus NPR-2.2
C. elegans NPR-2
S. ratti NPR-2
B. xylophilus NPR-2
G. pallida NPR-2
M. hapla NPR-2
M. incognita NPR-2
Consensus
A. suum NPR-2
A. caninum NPR-2
N. brasiliensis NPR-2.1
N. brasiliensis NPR-2.2
H. contortus NPR-2.1
H. contortus NPR-2.2
C. elegans NPR-2
S. ratti NPR-2
B. xylophilus NPR-2
G. pallida NPR-2
M. hapla NPR-2
M. incognita NPR-2
Consensus

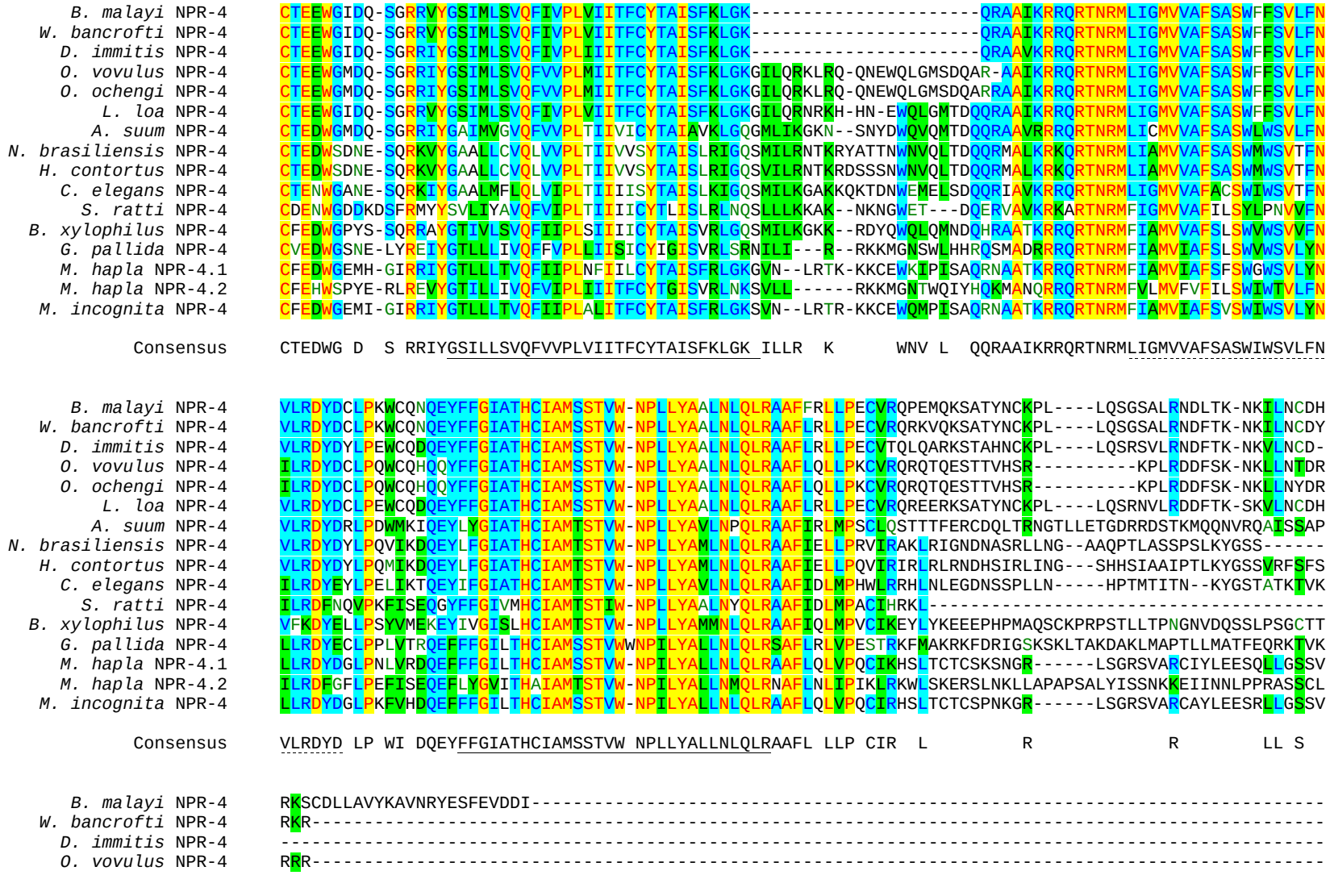
3. NPR-3 homologues




A. suum NPR-3
A. caninum NPR-3
N. brasiliensis NPR-3
H. contortus NPR-3
C. elegans NPR-3
B. xylophilus NPR-3
G. pallida NPR-3
M. hapla NPR-3
M. incognita NPR-3
Consensus
RTNRMMI MVLGLVLAWLPMNLINLYRD T WFSLIFA CHVIAMTSAVWNPVIYSWFNPQFR TI

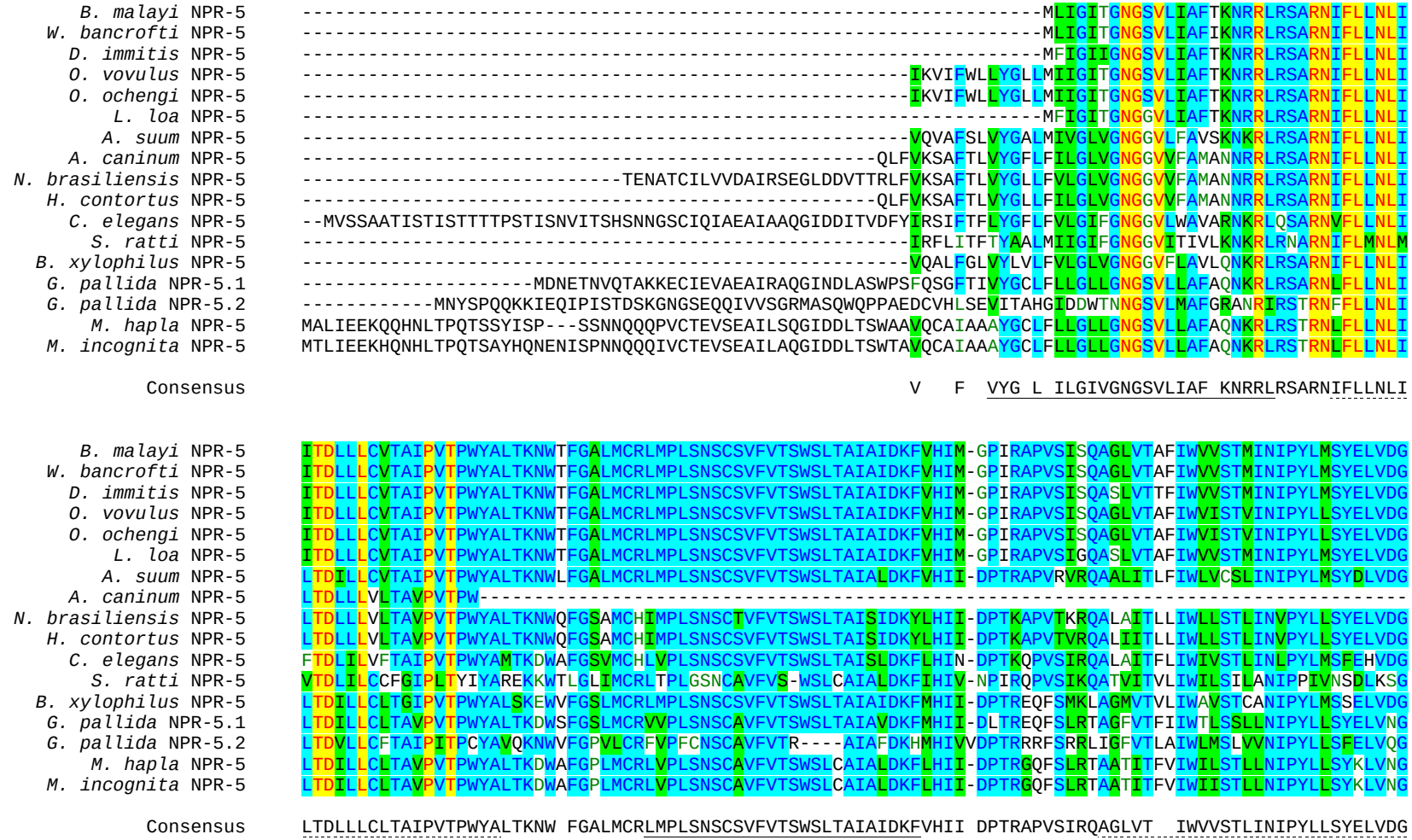
4. NPR-4 homologues

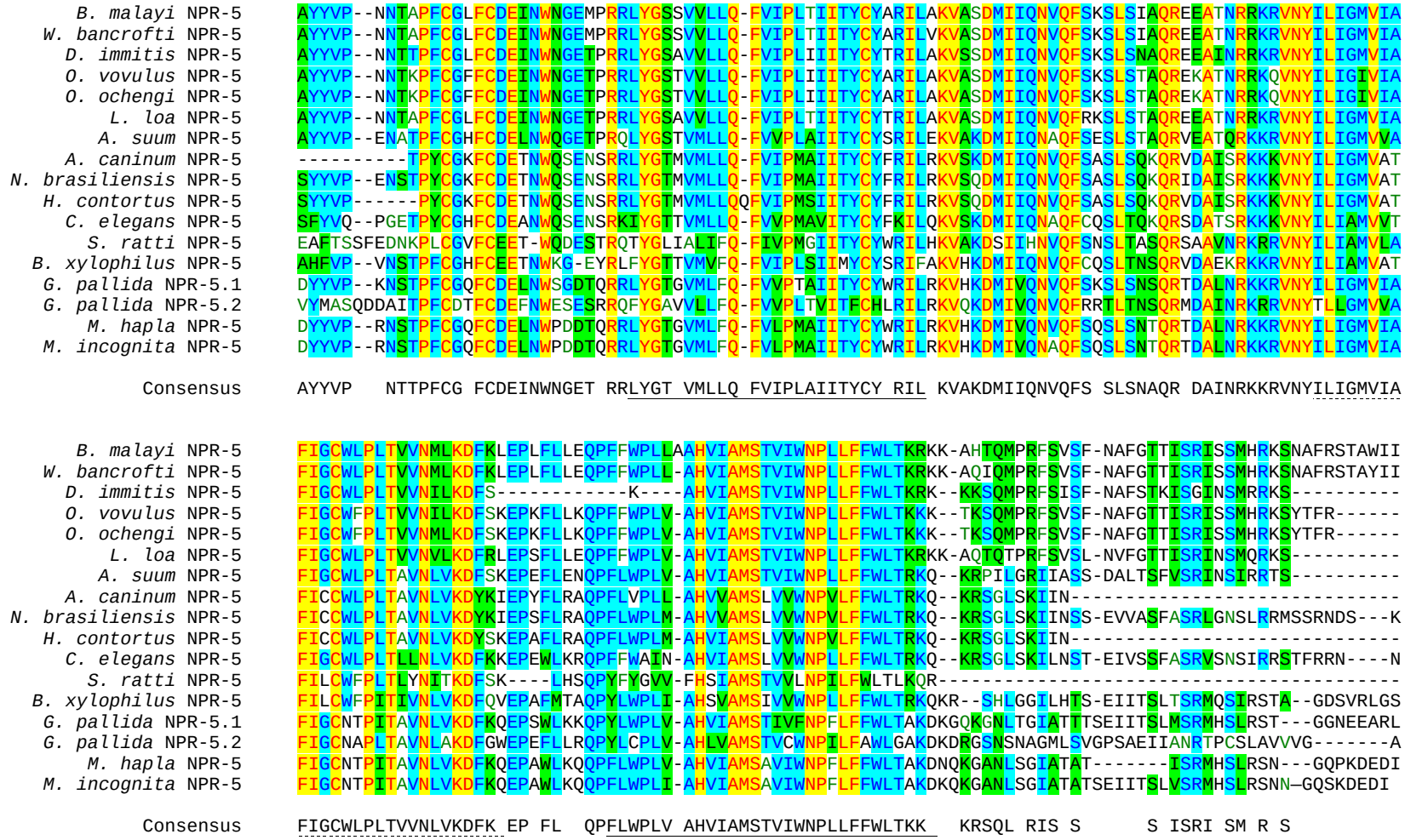


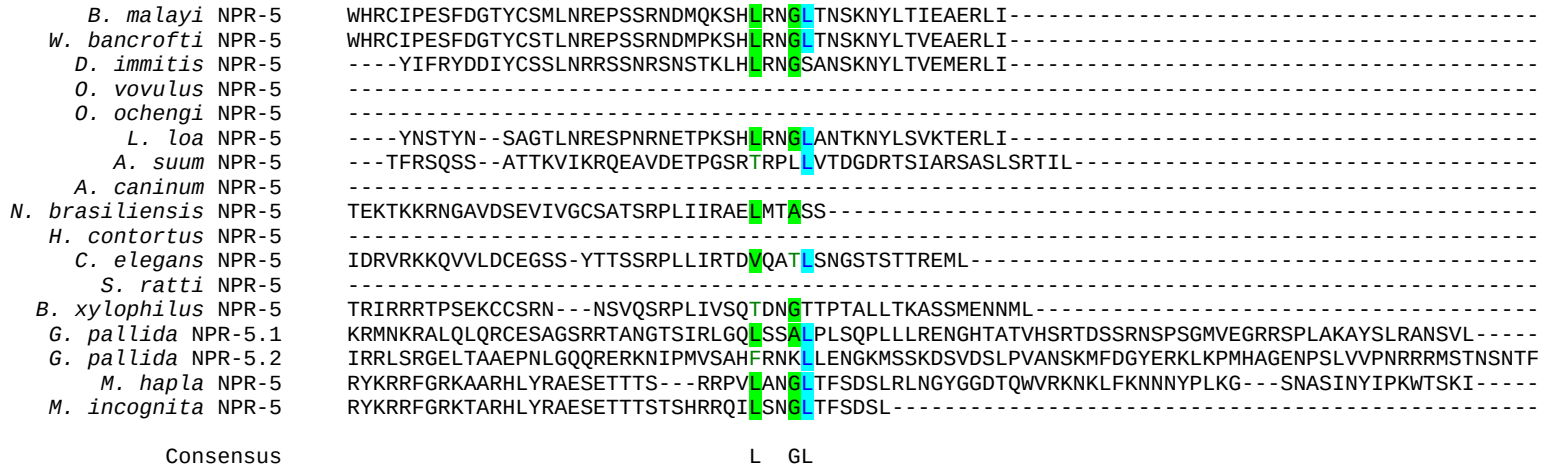

B. malayi NPR-4
W. bancrofti NPR-4
D. immitis NPR-4
O. vovulus NPR-4
O. ochengi NPR-4
L. loa NPR-4
A. suum NPR-4
N. brasiliensis NPR-4
H. contortus NPR-4
C. elegans NPR-4
S. ratti NPR-4
B. xylophilus NPR-4
G. pallida NPR-4
M. hapla NPR-4.1
M. hapla NPR-4.2
M. incognita NPR-4
Consensus
CTEDWG D S RRIYGSILLSVQFVVPLVIITFCYTAISFKLGK ILLR K WNV L QQRAAIKRRQRTNRMLIGMVVAFSASWIWSVLFN
VLRDYD LP WI DQEYFFGIATHCIAMSSTVW NPLLYALLNLQLRAAFL LLP CIR L R R LL S
RKSCDLLAVYKAVNRYESFEVDDI
RKR
RRR

```
     O. ochengi NPR-4     RR----------------------------------------------------------------------------------------------------
         L. loa NPR-4     RRR---------------------------------------------------------------------------------------------------
       A. suum NPR-4      GQYGATESSKGSPNVIIHLTTIGRDRYSRKFERCSFRSLVQRLSTKRENTSLVNNAHEFRRYSQQYQILSNSTSSGSPITASQLINDCQQIQHSFIKRSI
N. brasiliensis NPR-4     ----------------------------------------------------------------------------------------------------
   H. contortus NPR-4     YAFPQECSLLYHVNFELHYSNNVNFMWSTSNYSQSLY------------------------------------------------------------
     C. elegans NPR-4     ATYINTSNGQPYVSTSLVGKVQPEAPSFKFNGSGRKKSAMMRILVQKRNAEEEEQLITKESPSPPEIQMDTLCAASIIPRRKSAQPRSTNEKVVLPRKAS
       S. ratti NPR-4     ----------------------------------------------------------------------------------------------------
  B. xylophilus NPR-4     PRNGWLAPGFLKTGPRNSISSMASAFSSQPNGGLDDGTRLVQSTLTSTKYGAVESSENTRWSDEGFVDHGTVRLTTF-----------------------
     G. pallida NPR-4     ERPNEPRQLKTDFLPKPRKFESRTNKSLCSSEGR---------------------------------------------------------------
     M. hapla NPR-4.1    LRGASSHLQKRETGYGNKNCFNCLIGSSGSIESSSNETQKQMIAVRSAEKKRDDQIPVQKNFFQMC---------------------------------
     M. hapla NPR-4.2    LPLAHNKNEENYLKSSGDELFSSTTKSGTNLVSGSASVRSQSINLKSTRSVRGTGATISA-------------------------------------
   M. incognita NPR-4     LRGTTGQVQRRETNYENKNCFNCLIGSSRSVESSSNETQKQTFSVKCEGNKGDAKILSHNHHRHQLERITADVGFDEQTWTEQLRKDSEDDALDDCNDDL

            Consensus      R


      B. malayi NPR-4     -------------------
   W. bancrofti NPR-4     -------------------
     D. immitis NPR-4     -------------------
     O. vovulus NPR-4     -------------------
     O. ochengi NPR-4     -------------------
         L. loa NPR-4     -------------------
       A. suum NPR-4      SHLHNESANCPFIIRSYSY
N. brasiliensis NPR-4     -------------------
   H. contortus NPR-4     -------------------
     C. elegans NPR-4     F------------------
       S. ratti NPR-4     -------------------
  B. xylophilus NPR-4     -------------------
     G. pallida NPR-4     -------------------
     M. hapla NPR-4.1     -------------------
     M. hapla NPR-4.2     -------------------
   M. incognita NPR-4     RERDTDERI----------

            Consensus
```

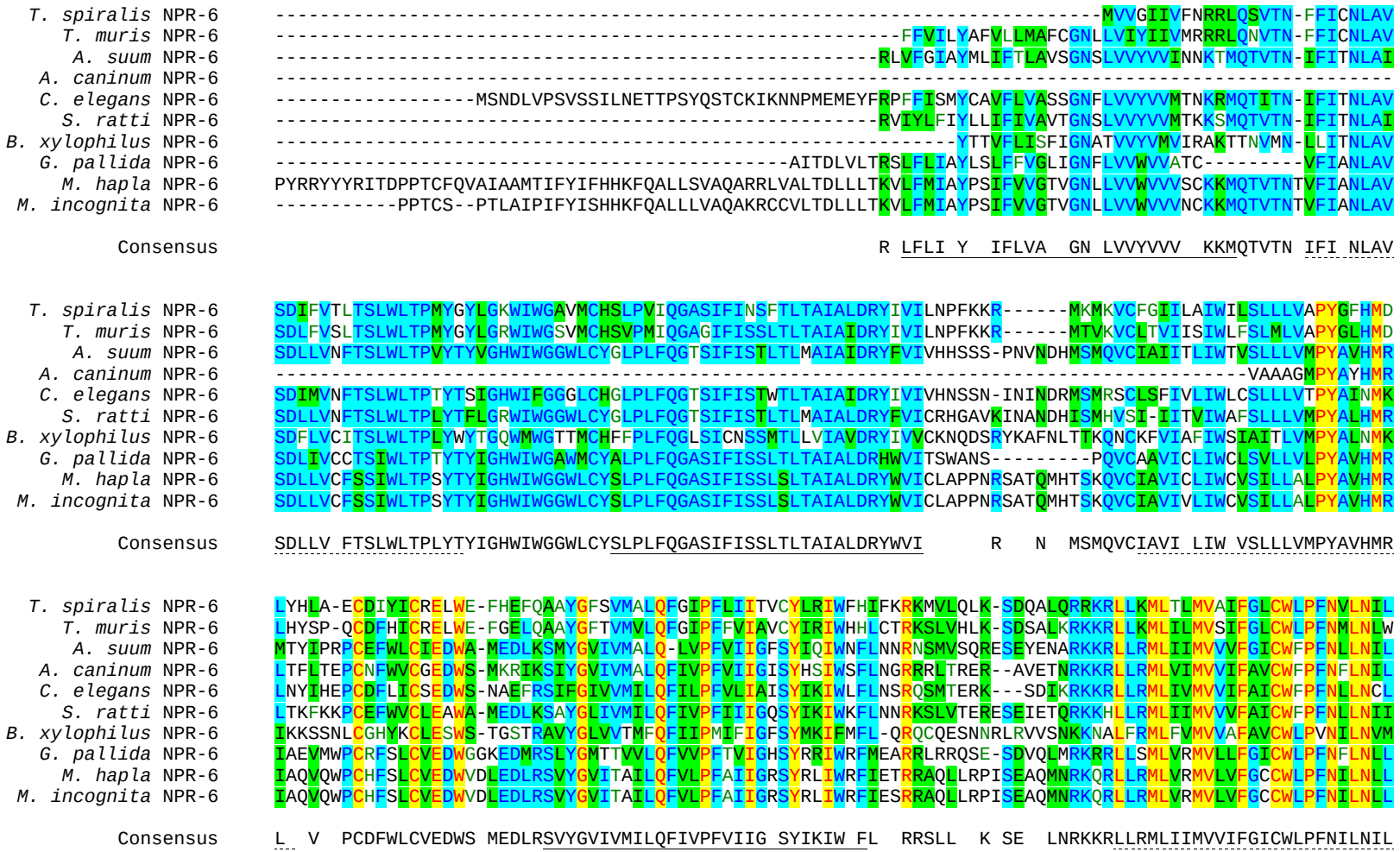
5. NPR-5 homologues




B. malayi NPR-5
W. bancrofti NPR-5
D. immitis NPR-5
O. vovulus NPR-5
O. ochengi NPR-5
L. loa NPR-5
A. suum NPR-5
A. caninum NPR-5
N. brasiliensis NPR-5
H. contortus NPR-5
C. elegans NPR-5
S. ratti NPR-5
B. xylophilus NPR-5
G. pallida NPR-5.1
G. pallida NPR-5.2
M. hapla NPR-5
M. incognita NPR-5
Consensus


B. malayi NPR-5 WHRCIPESFDGTYCSMLNREPSSRNDMQKSHLRNGLTNSKNYLTIEAERLI
W. bancrofti NPR-5 WHRCIPESFDGTYCSTLNREPSSRNDMPKSHLRNGLTNSKNYLTVEAERLI
D. immitis NPR-5 ----YIFRYDDIYCSSLNRRSSNRSNSTKLHLRNGSANSKNYLTVEMERLI
O. vovulus NPR-5
O. ochengi NPR-5
L. loa NPR-5 ----YNSTYN--SAGTLNRESPNRNETPKSHLRNGLANTKNYLSVKTERLI
A. suum NPR-5 ---TFRSQSS--ATTKVIKRQEAVDETPGSRTRPLLVTDGDRTSIARSASLSRTIL
A. caninum NPR-5
N. brasiliensis NPR-5 TEKTKKRNGAVDSEVIVGCSATSRPLIIRAELMTASS
H. contortus NPR-5
C. elegans NPR-5 IDRVRKKQVVLDCEGSS-YTTSSRPLLIRTDVQATLSNGSTSTTREML
S. ratti NPR-5
B. xylophilus NPR-5 TRIRRRTPSEKCCSRN---NSVQSRPLIVSQTDNGTTPTALLTKASSMENNML
G. pallida NPR-5.1 KRMNKRALQLQRCESAGSRRTANGTSIRLGQLSSALPLSQPLLLRENGHTATVHSRTDSSRNSPSGMVEGRRSPLAKAYSLRANSVL-----
G. pallida NPR-5.2 IRRLSRGELTAAEPNLGQQRERKNIPMVSAHFRNKLLENGKMSSKDSVDSLPVANSKMFDGYERKLKPMHAGENPSLVVPNRRRMSTNSNTF
M. hapla NPR-5 RYKRRFGRKAARHLYRAESETTTS---RRPVLANGLTFSDSLRLNGYGGDTQWVRKNKLFKNNNYPLKG---SNASINYIPKWTSKI-----
M. incognita NPR-5 RYKRRFGRKTARHLYRAESETTTSTSHRRQILSNGLTFSDSL
Consensus L GL

6. NPR-6 homologues



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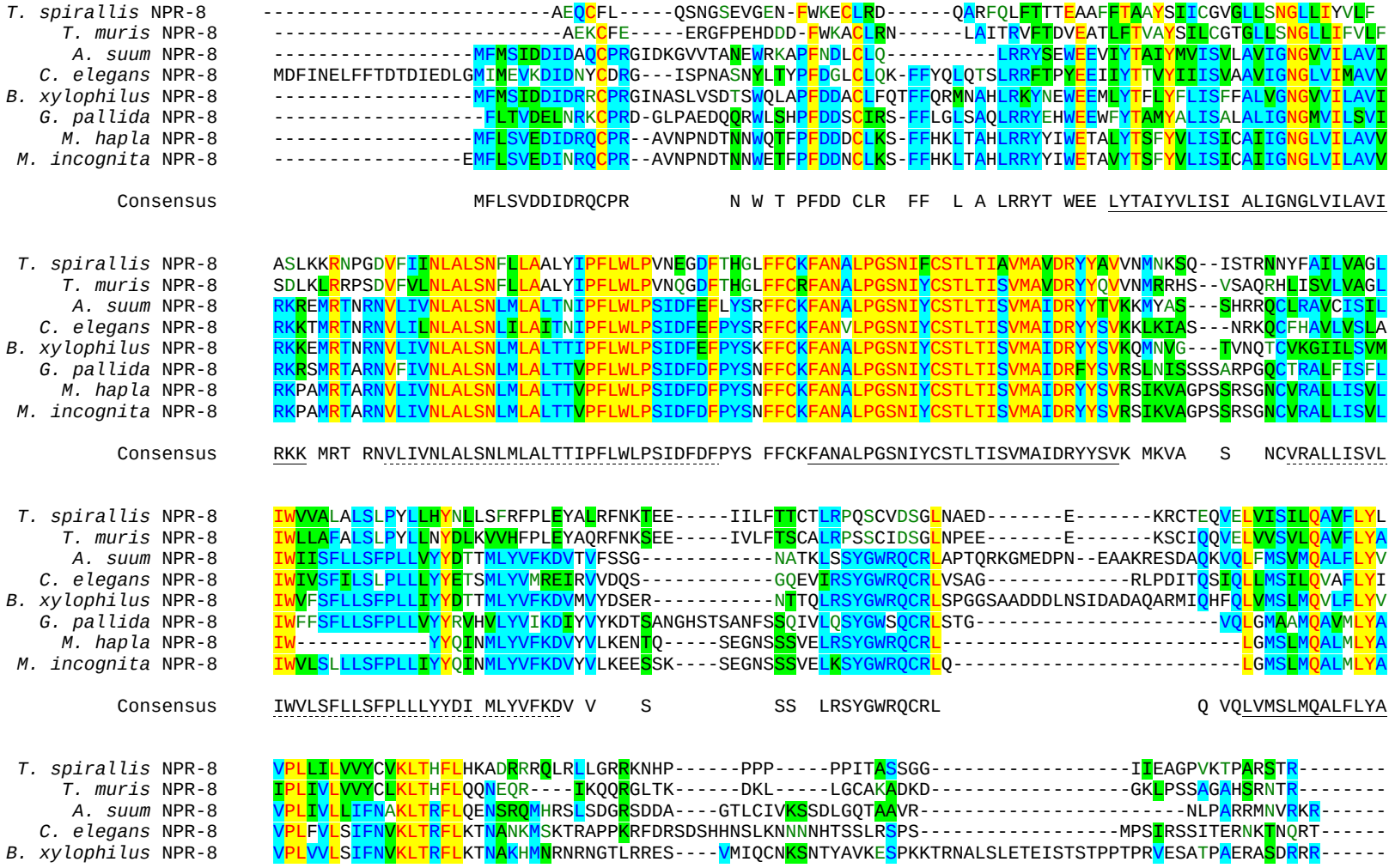
  T. spiralis NPR-6     RDVMPSHFDGKSYFVFLFLVSHLIAMSSSSWNTVLYAWMNYHFNREFRPWIHPGSWQMSQNKMTNCIKWLKRVTEAITTFLTLVETQILIDCMLQKHIIF
     T. muris NPR-6     RDLSPGAIDAKSYFVFLFLLSHLIAMSASGWNPVLYAWMNDNFSREYRYIFYFLCGRK----------------------------------------
      A. suum NPR-6     RDLHLDSSIKP-YFSFLFLSAHVISMTATCWNPIVYAWMNDAFRERFVAAVPFL--------------------------------------------
   A. caninum NPR-6     RDLHWDDFIRP-HFSFIFLIVHLISMTATCWNPILYAWMNDSFR----------------------------------------------------
   C. elegans NPR-6     RDLKLDNFMRG-YFSFVFLSVHLMSMTATAWNPILYAFMNETFREEFAKVVPCLFARRPGTGPIRVITERTAMITNPFRRANRKKKVEEQPVTVISESPL
     S. ratti NPR-6     RDLRLDDGIKQ-YFPPLFLTSHVLSMTATCWNPIVYAWMNESFRKEFIHAIPFLQKHFQLNAKNNHRARVITDCQPALIRVNCKDNNKQK---------
B. xylophilus NPR-6     RDIGLDQLILGRQFGIWFMRAHMLSMTGVMVNPLIYAFMNHNFRDEFCRVFP----------------------------------------------
   G. pallida NPR-6     RDLHADAFLKV---SFLFLFAHLLSMVVPAANPLLYAWMNASFRDGFLRVLP----------------------------------------------
     M. hapla NPR-6     RDLRMDAWLKP---SFLFLLAHLLSMVVPAANPLLYAWMNSAFRESFLRALP----------------------------------------------
 M. incognita NPR-6     RDLRMDGWLK----SFLFLLSHLLSMVVPAANPLLYAWMNSAFRESFLRALP----------------------------------------------

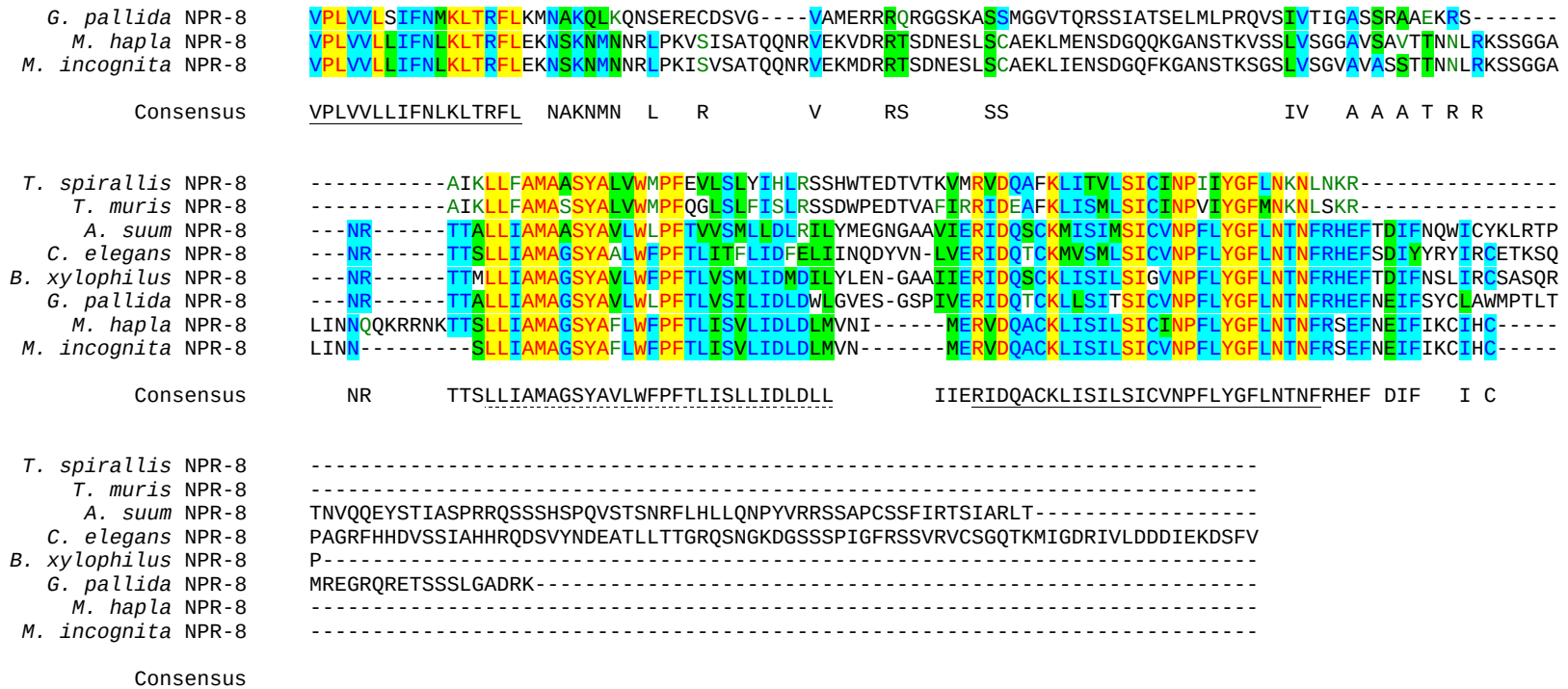
          Consensus     RDL LD FIK  YFSFLFLLAHLLSMTATAWNPILYAWMNDAFREEFLR LP


  T. spiralis NPR-6     KKYCCKVLRELNAQLLNGENAVNQWICQKPFYKMSKKFSSVKLKQLII
     T. muris NPR-6     -------------------------------------------------
      A. suum NPR-6     -------------------------------------------------
   A. caninum NPR-6     -------------------------------------------------
   C. elegans NPR-6     QTAVEPQRSIVYLDEPENGSSCQTLLL---------------------
     S. ratti NPR-6     -------------------------------------------------
B. xylophilus NPR-6     -------------------------------------------------
   G. pallida NPR-6     -------------------------------------------------
     M. hapla NPR-6     -------------------------------------------------
 M. incognita NPR-6     -------------------------------------------------

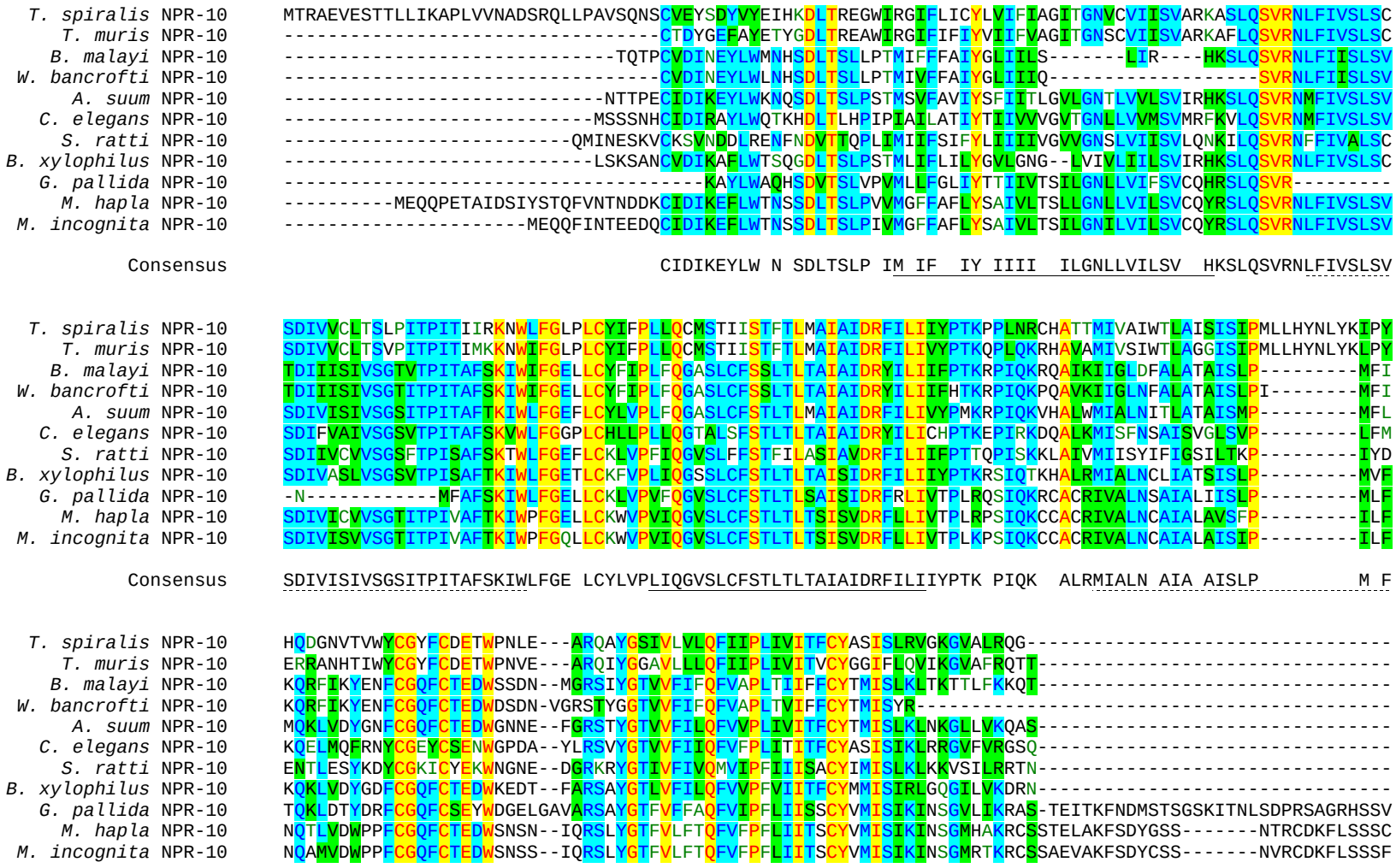
          Consensus
```

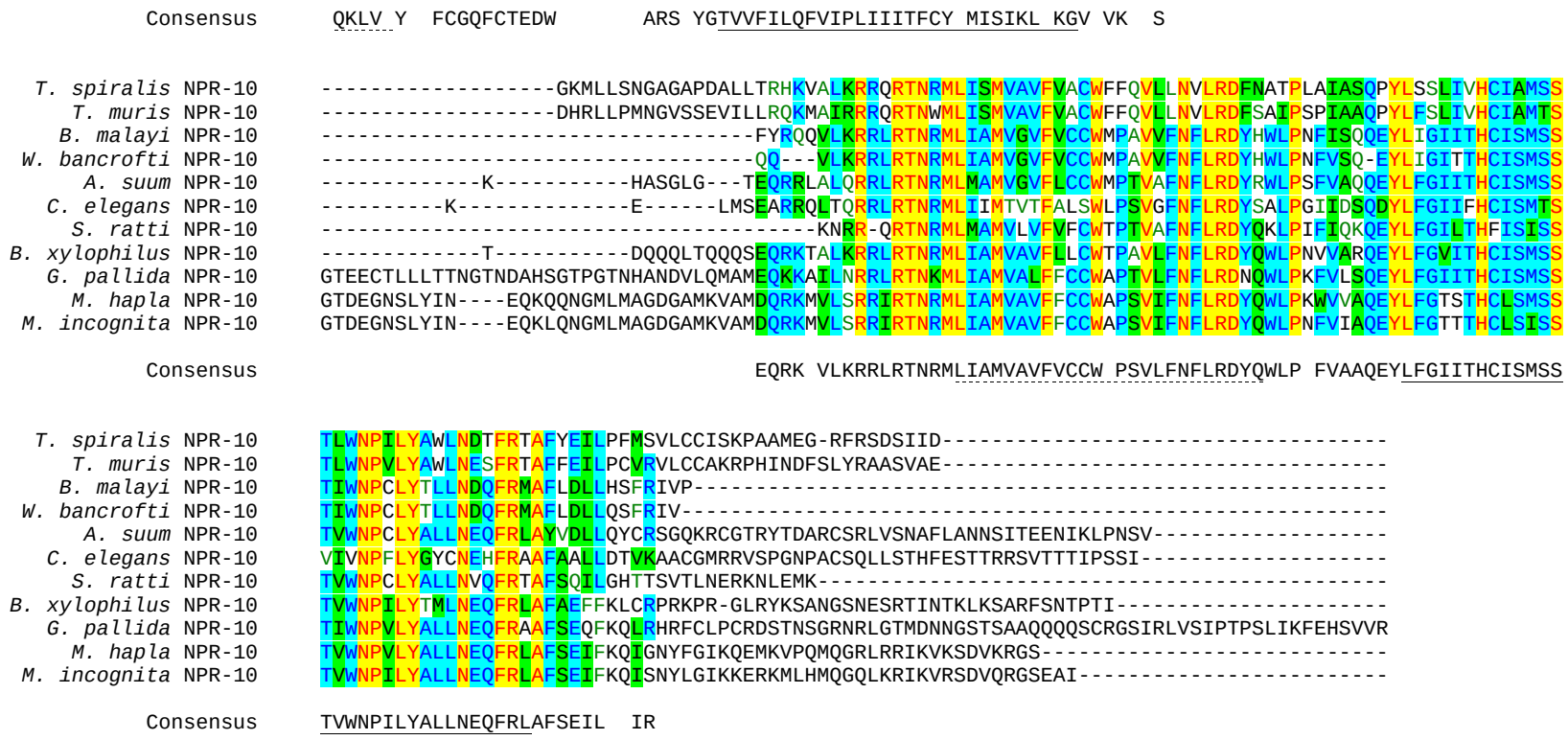
7. NPR-8 homologues



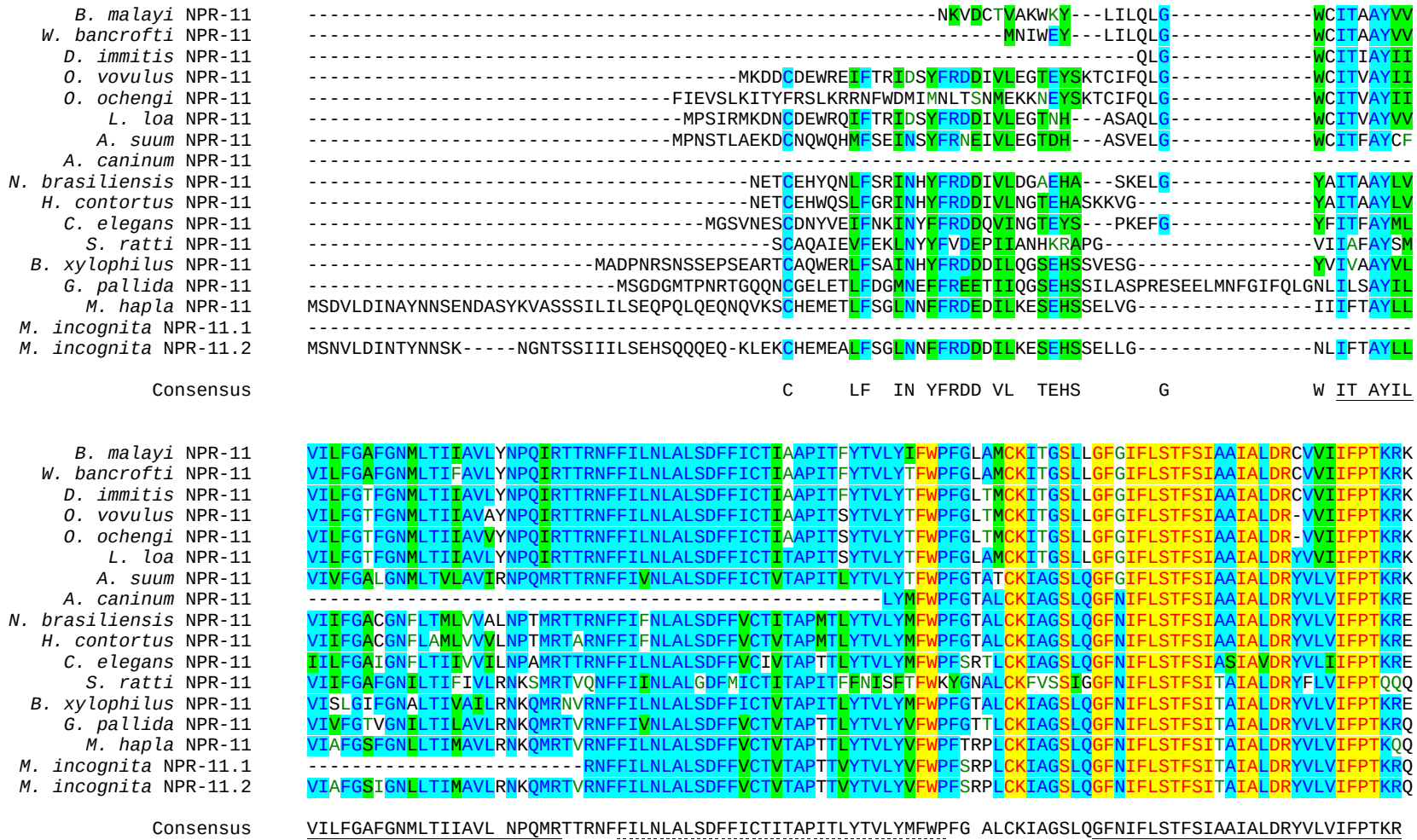

G. pallida NPR-8 VPLVVLSIFNMKLTRFLKMNAKQLKQNSERECDSVG----VAMERRRQRGGSKASSMGGVTQRSSIATSELMLPRQVSIVTIGASSRAAEKRS-------
M. hapla NPR-8 VPLVVLLIFNLKLTRFLEKNSKNMNNRLPKVSISATQQNRVEKVDRRTSDNESLSCAEKLMENSDGQQKGANSTKVSSLVSGGAVSAVTTNNLRKSSGGA
M. incognita NPR-8 VPLVVLLIFNLKLTRFLEKNSKNMNNRLPKISVSATQQNRVEKMDRRTSDNESLSCAEKLIENSDGQFKGANSTKSGSLVSGVAVASSTTNNLRKSSGGA
Consensus VPLVVLLIFNLKLTRFL NAKNMN L R V RS SS IV A A A T R R
T. spirallis NPR-8 ----------AIKLLFAMAASYALVWMPFEVLSLYIHLRSSHWTEDTVTKVMRVDQAFKLITVLSICINPIIYGFLNKNLNKR----------
T. muris NPR-8 ----------AIKLLFAMASSYALVWMPFQGLSLFISLRSSDWPEDTVAFIRRIDEAFKLISMLSICINPVIYGFMNKNLSKR----------
A. suum NPR-8 ---NR------TTALLIAMAASYAVLWLPFTVVSMLLDLRILYMEGNGAAVIERIDQSCKMISIMSICVNPFLYGFLNTNFRHEFTDIFNQWICYKLRTP
C. elegans NPR-8 ---NR------TTSLLIAMAGSYAALWFPFTLITFLIDFELIINQDYVN-LVERIDQTCKMVSMLSICVNPFLYGFLNTNFRHEFSDIYYRYIRCETKSQ
B. xylophilus NPR-8 ---NR------TTMLLIAMAGSYAVLWFPFTLVSMLIDMDILYLEN-GAAIIERIDQSCKLISILSIGVNPFLYGFLNTNFRHEFTDIFNSLIRCSASQR
G. pallida NPR-8 ---NR------TTALLIAMAGSYAVLWLPFTLVSILIDLDWLGVES-GSPIVERIDQTCKLLSITSICVNPFLYGFLNTNFRHEFNEIFSYCLAWMPTLT
M. hapla NPR-8 LINNQQKRRNKTTSLLIAMAGSYAFLWFPFTLISVLIDLDLMVNI------MERVDQACKLISILSICINPFLYGFLNTNFRSEFNEIFIKCIHC-----
M. incognita NPR-8 LINN---------SLLIAMAGSYAFLWFPFTLISVLIDLDLMVN-------MERVDQACKLISILSICVNPFLYGFLNTNFRSEFNEIFIKCIHC-----
Consensus NR TTSLLIAMAGSYAVLWFPFTLISLLIDLDLL IIERIDQACKLISILSICVNPFLYGFLNTNFRHEF DIF I C
T. spirallis NPR-8 ----------
T. muris NPR-8 ----------
A. suum NPR-8 TNVQQEYSTIASPRRQSSSHSPQVSTSNRFLHLLQNPYVRRSSAPCSSFIRTSIARLT----------
C. elegans NPR-8 PAGRFHHDVSSIAHHRQDSVYNDEATLLTTGRQSNGKDGSSSPIGFRSSVRVCSGQTKMIGDRIVLDDDIEKDSFV
B. xylophilus NPR-8 P----------
G. pallida NPR-8 MREGRQRETSSSLGADRK----------
M. hapla NPR-8 ----------
M. incognita NPR-8 ----------
Consensus

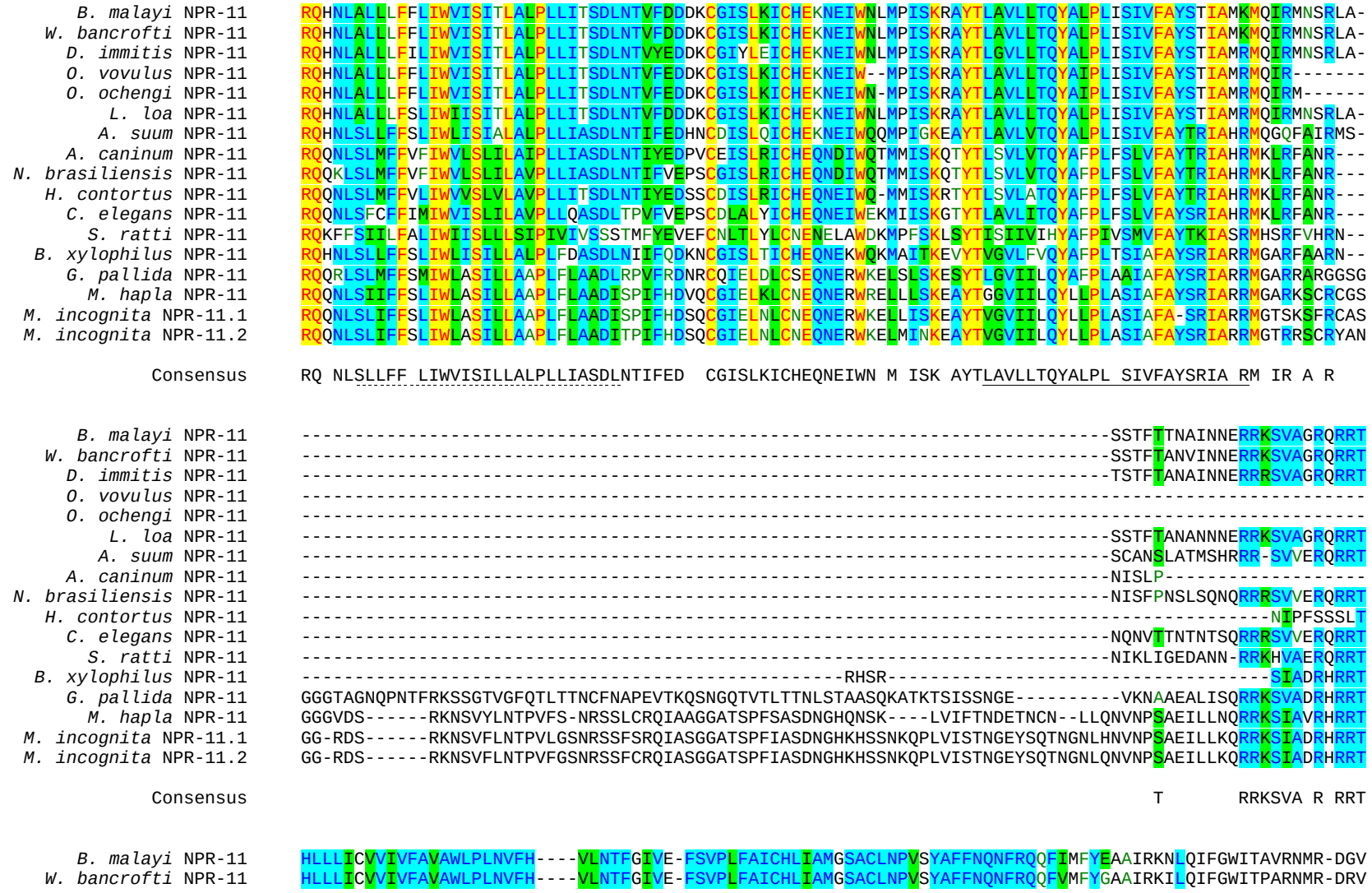
8. NPR-10 homologues

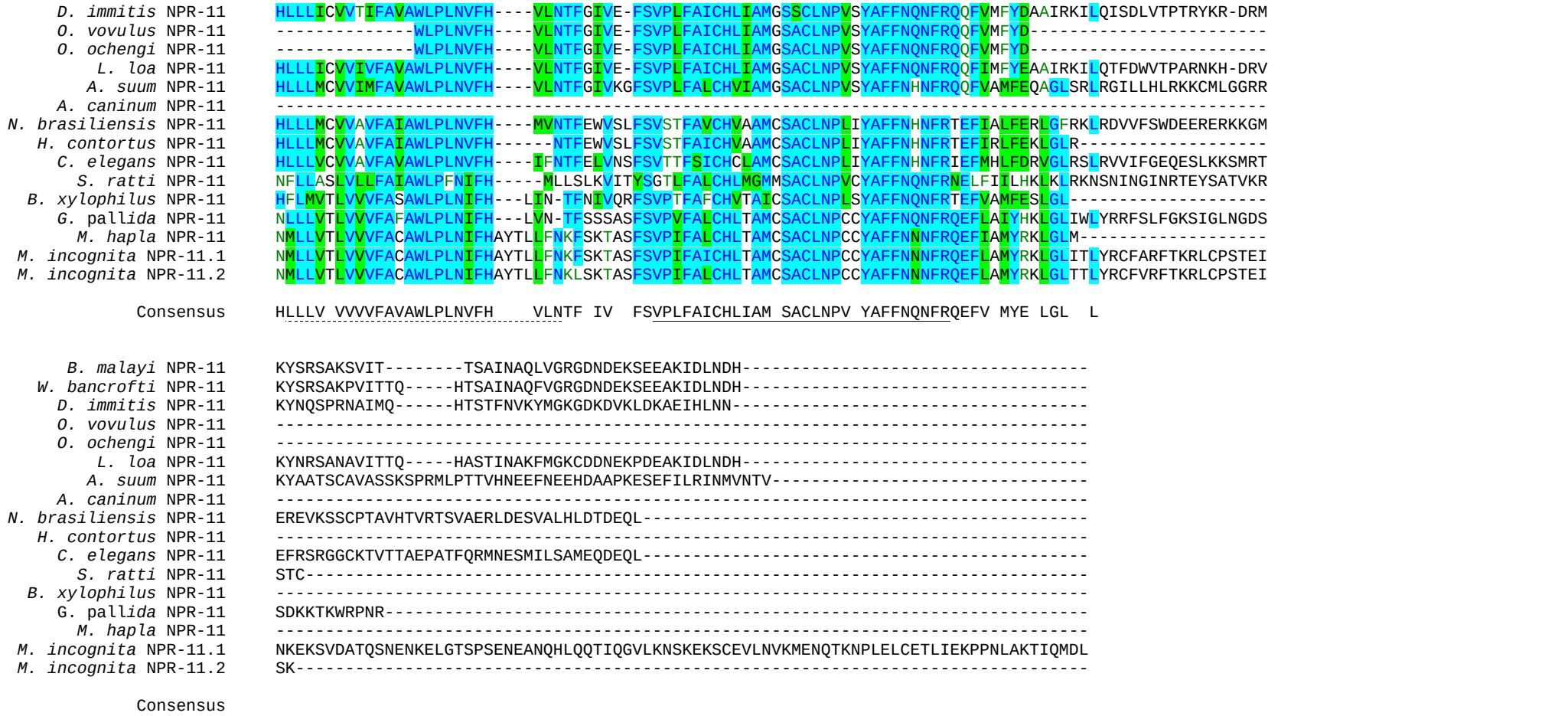



Consensus QKLV Y FCGQFCTEDW ARS YGTVVFILQFVIPLIIITFCY MISIKL KGV VK S
T. spiralis NPR-10 ----------GKMLLSNGAGAPDALLTRHKVALKRRQRTNRMLISMVAVFVACWFFQVLLNVLRDFNATPLAIASQPYLSSLIVHCIAMSS
T. muris NPR-10 ----------DHRLLPMNGVSSEVILLRQKMAIRRRQRTNWMLISMVAVFVACWFFQVLLNVLRDFSAIPSPIAAQPYLFSLIVHCIAMTS
B. malayi NPR-10 ----------FYRQQVLKRRLRTNRMLIAMVGVFVCCWMPAVVFNFLRDYHWLPNFISQQEYLIGIITHCISMSS
W. bancrofti NPR-10 ----------QQ---VLKRRLRTNRMLIAMVGVFVCCWMPAVVFNFLRDYHWLPNFVSQ-EYLIGITTHCISMSS
A. suum NPR-10 ----------K----------HASGLG---TEQRRLALQRRLRTNRMLMAMVGVFLCCWMPTVAFNFLRDYRWLPSFVAQQEYLFGIITHCISMSS
C. elegans NPR-10 ----------K----------E------LMSEARRQLTQRRLRTNRMLIIMTVTFALSWLPSVGFNFLRDYSALPGIIDSQDYLFGIIFHCISMTS
S. ratti NPR-10 ----------KNRR-QRTNRMLMAMVLVFVFCWTPTVAFNFLRDYQKLPIFIQKQEYLFGILTHFISISS
B. xylophilus NPR-10 ----------T----------DQQQLTQQQSEQRKTALKRRLRTNRMLIAMVAVFLLCWTPAVLFNFLRDYQWLPNVVARQEYLFGVITHCISMSS
G. pallida NPR-10 GTEECTLLLTTNGTNDAHSGTPGTNHANDVLQMAMEQKKAILNRRLRTNKMLIAMVALFFCCWAPTVLFNFLRDNQWLPKFVLSQEYLFGIITHCISMSS
M. hapla NPR-10 GTDEGNSLYIN----EQKQQNGMLMAGDGAMKVAMDQRKMVLSRRIRTNRMLIAMVAVFFCCWAPSVIFNFLRDYQWLPKWVVAQEYLFGTSTHCLSMSS
M. incognita NPR-10 GTDEGNSLYIN----EQKLQNGMLMAGDGAMKVAMDQRKMVLSRRIRTNRMLIAMVAVFFCCWAPSVIFNFLRDYQWLPNFVIAQEYLFGTTTHCLSISS
Consensus EQRK VLKRRLRTNRMLIAMVAVFVCCW PSVLFNFLRDYQWLP FVAAQEYLFGIITHCISMSS
T. spiralis NPR-10 TLWNPILYAWLNDTFRTAFYEILPFMSVLCCISKPAAMEG-RFRSDSIID----------
T. muris NPR-10 TLWNPVLYAWLNESFRTAFFEILPCVRVLCCAKRPHINDFSLYRAASVAE----------
B. malayi NPR-10 TIWNPCLYTLLNDQFRMAFLDLLHSFRIVP----------
W. bancrofti NPR-10 TIWNPCLYTLLNDQFRMAFLDLLQSFRIV----------
A. suum NPR-10 TVWNPCLYALLNEQFRLAYVDLLQYCRSGQKRCGTRYTDARCSRLVSNAFLANNSITEENIKLPNSV----------
C. elegans NPR-10 VIVNPFLYGYCNEHFRAAFAALLDTVKAACGMRRVSPGNPACSQLLSTHFESTTRRSVTTTIPSSI----------
S. ratti NPR-10 TVWNPCLYALLNVQFRTAFSQILGHTTSVTLNERKNLEMK----------
B. xylophilus NPR-10 TVWNPILYTMLNEQFRLAFAEFFKLCRPRKPR-GLRYKSANGSNESRTINTKLKSARFSNTPTI----------
G. pallida NPR-10 TIWNPVLYALLNEQFRAAFSEQFKQLRHRFCLPCRDSTNSGRNRLGTMDNNGSTSAAQQQQSCRGSIRLVSIPTPSLIKFEHSVVR
M. hapla NPR-10 TVWNPVLYALLNEQFRLAFSEIFKQIGNYFGIKQEMKVPQMQGRLRRIKVKSDVKRGS----------
M. incognita NPR-10 TVWNPILYALLNEQFRLAFSEIFKQISNYLGIKKERKMLHMQGQLKRIKVRSDVQRGSEAI----------
Consensus TVWNPILYALLNEQFRLAFSEIL IR

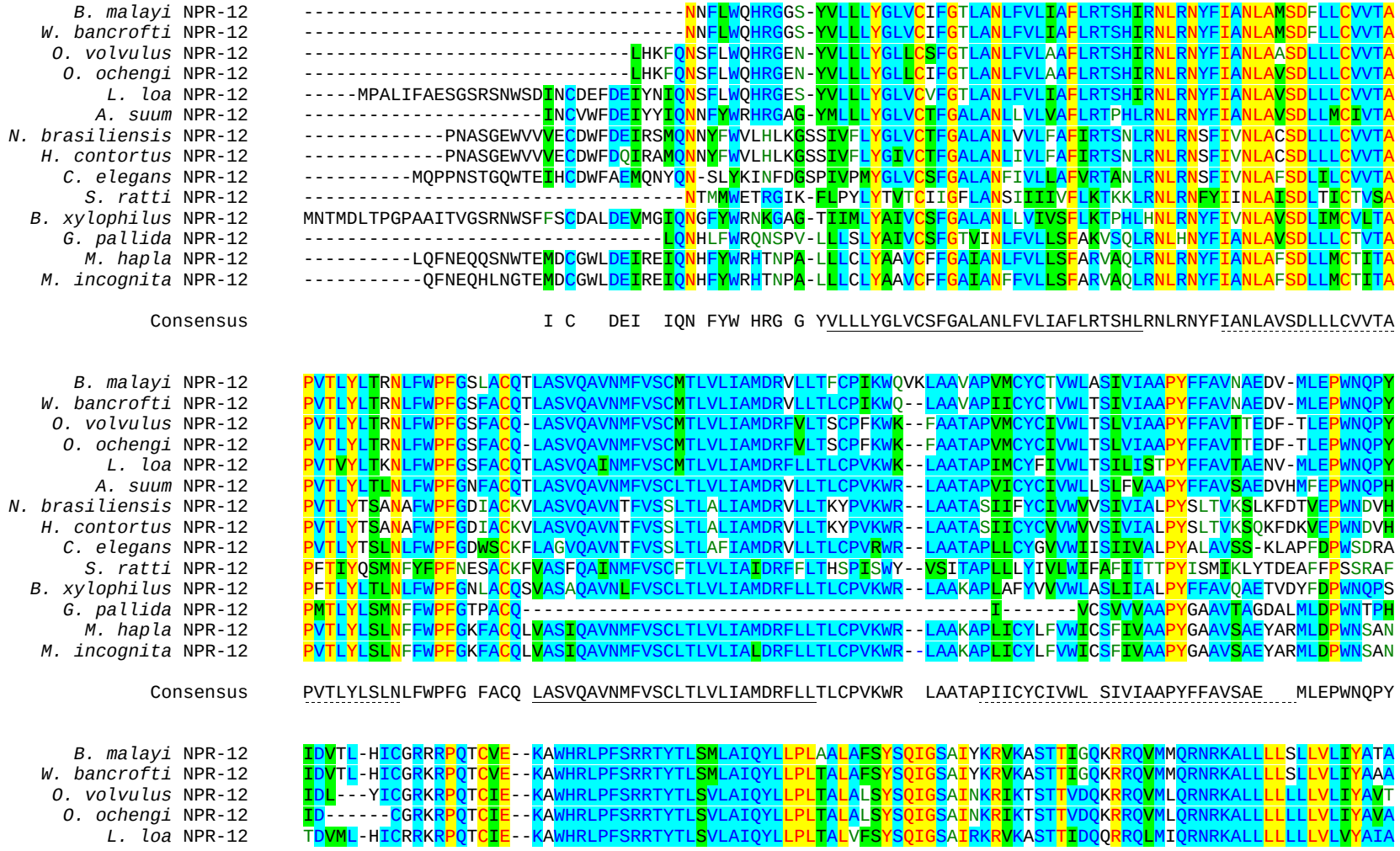
9. NPR-11 homologues

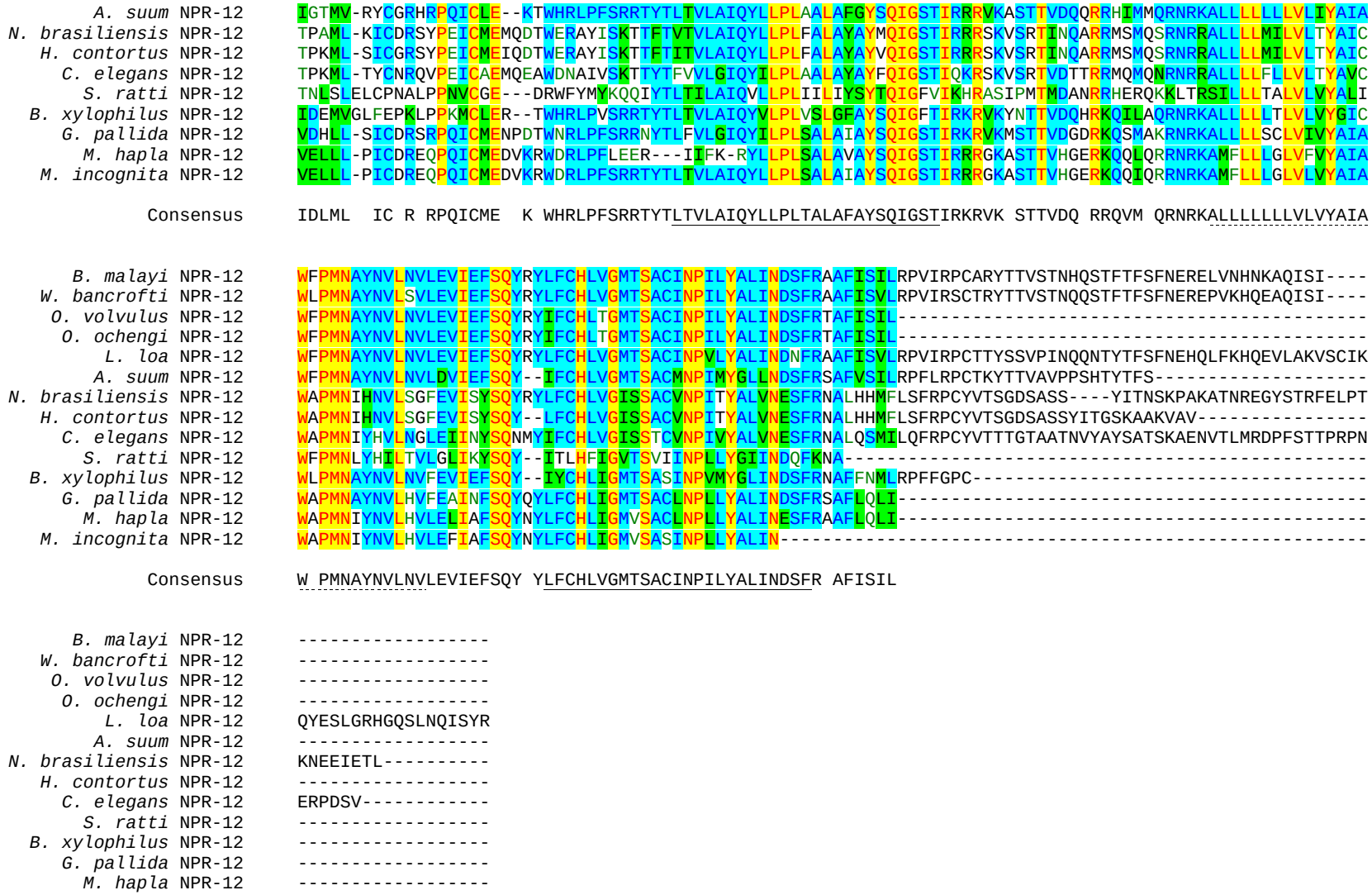



B. malayi NPR-11
W. bancrofti NPR-11
D. immitis NPR-11
O. vovulus NPR-11
O. ochengi NPR-11
L. loa NPR-11
A. suum NPR-11
A. caninum NPR-11
N. brasiliensis NPR-11
H. contortus NPR-11
C. elegans NPR-11
S. ratti NPR-11
B. xylophilus NPR-11
G. pallida NPR-11
M. hapla NPR-11
M. incognita NPR-11.1
M. incognita NPR-11.2
Consensus


D. immitis NPR-11
O. vovulus NPR-11
O. ochengi NPR-11
L. loa NPR-11
A. suum NPR-11
A. caninum NPR-11
N. brasiliensis NPR-11
H. contortus NPR-11
C. elegans NPR-11
S. ratti NPR-11
B. xylophilus NPR-11
G. pallida NPR-11
M. hapla NPR-11
M. incognita NPR-11.1
M. incognita NPR-11.2
Consensus
B. malayi NPR-11
W. bancrofti NPR-11
D. immitis NPR-11
O. vovulus NPR-11
O. ochengi NPR-11
L. loa NPR-11
A. suum NPR-11
A. caninum NPR-11
N. brasiliensis NPR-11
H. contortus NPR-11
C. elegans NPR-11
S. ratti NPR-11
B. xylophilus NPR-11
G. pallida NPR-11
M. hapla NPR-11
M. incognita NPR-11.1
M. incognita NPR-11.2
Consensus

10. NPR-12 homologues

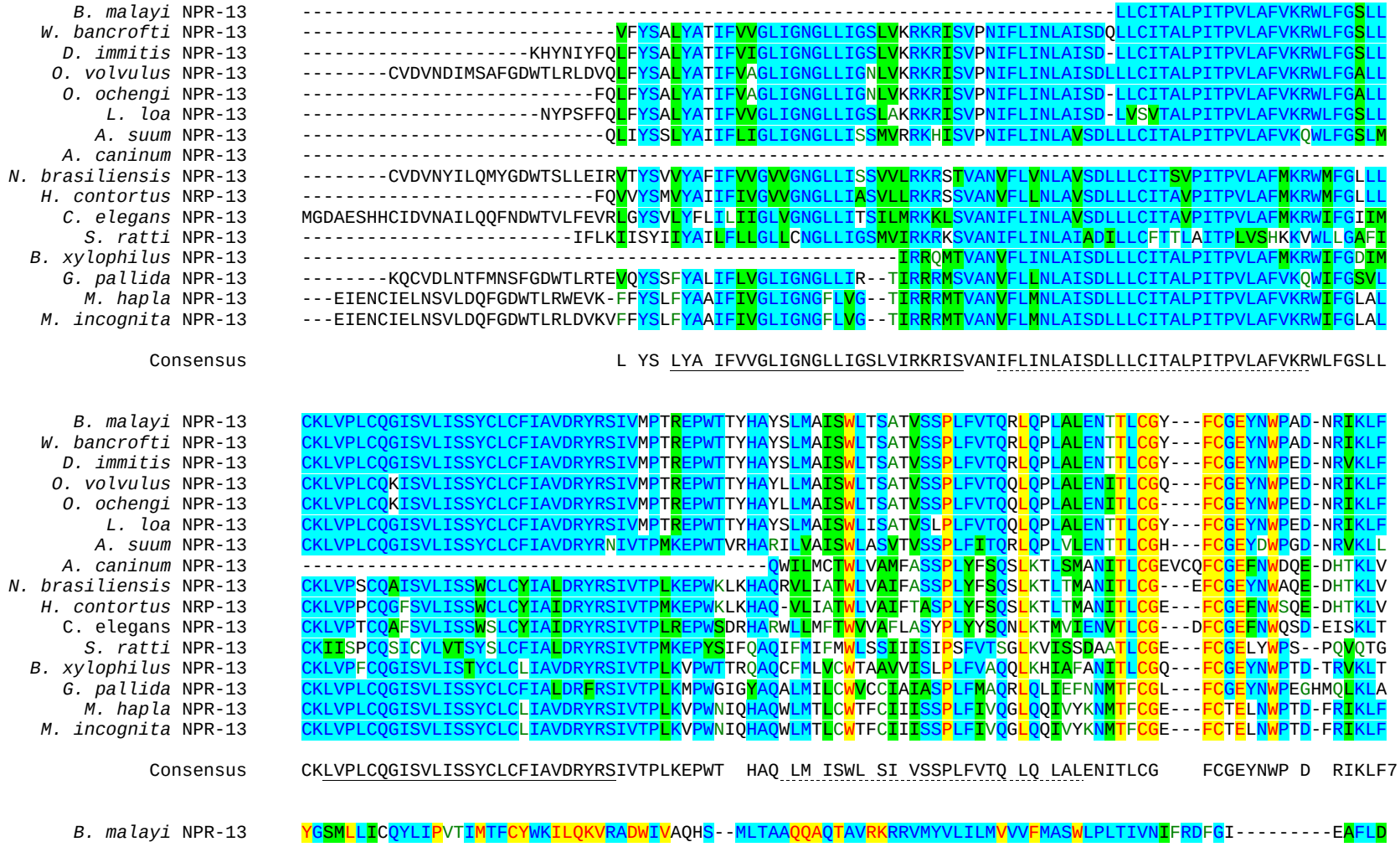


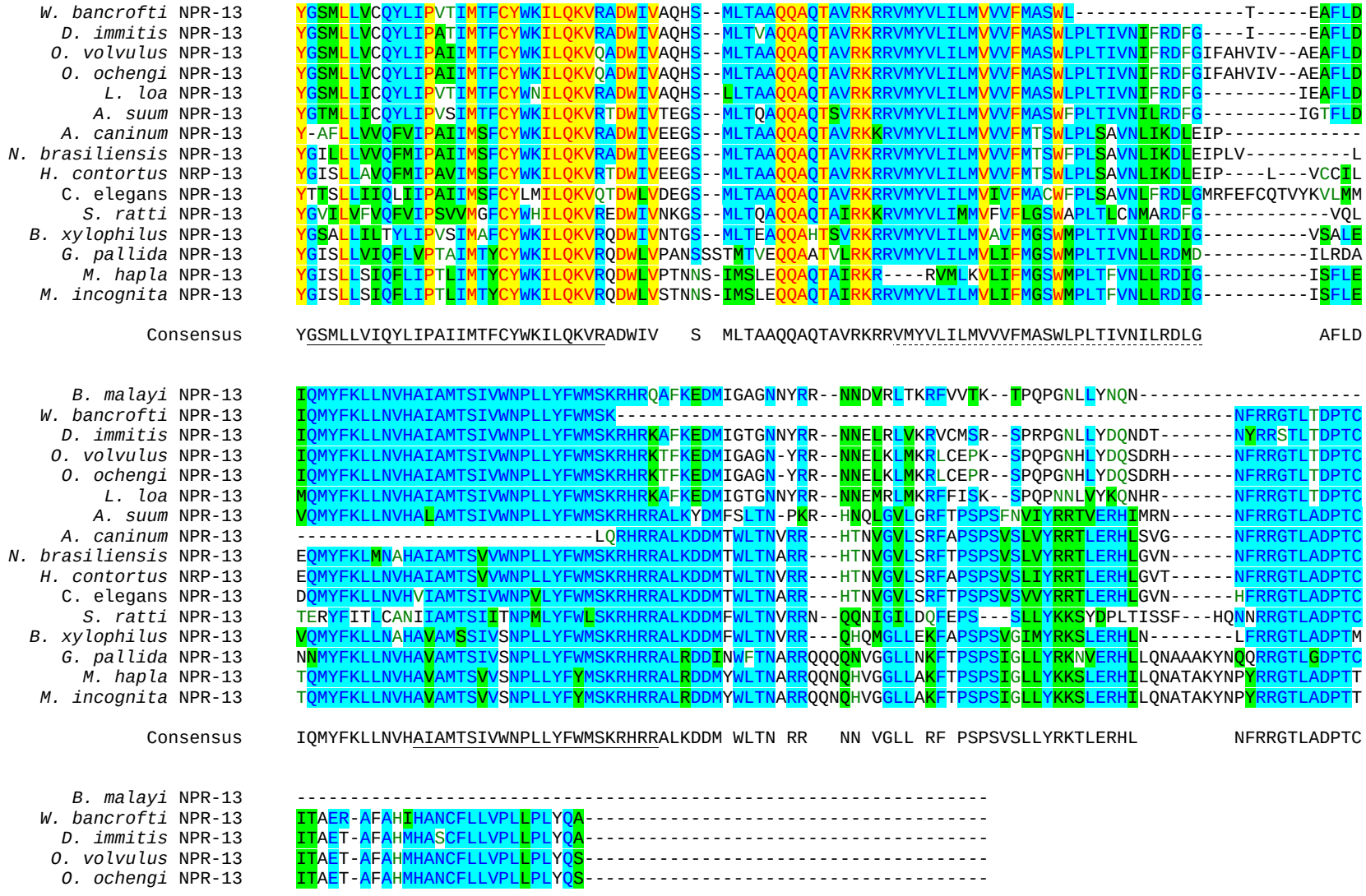

A. suum NPR-12
N. brasiliensis NPR-12
H. contortus NPR-12
C. elegans NPR-12
S. ratti NPR-12
B. xylophilus NPR-12
G. pallida NPR-12
M. hapla NPR-12
M. incognita NPR-12
Consensus
B. malayi NPR-12
W. bancrofti NPR-12
O. volvulus NPR-12
O. ochengi NPR-12
L. loa NPR-12
A. suum NPR-12
N. brasiliensis NPR-12
H. contortus NPR-12
C. elegans NPR-12
S. ratti NPR-12
B. xylophilus NPR-12
G. pallida NPR-12
M. hapla NPR-12
M. incognita NPR-12
Consensus
B. malayi NPR-12
W. bancrofti NPR-12
O. volvulus NPR-12
O. ochengi NPR-12
L. loa NPR-12
A. suum NPR-12
N. brasiliensis NPR-12
H. contortus NPR-12
C. elegans NPR-12
S. ratti NPR-12
B. xylophilus NPR-12
G. pallida NPR-12
M. hapla NPR-12

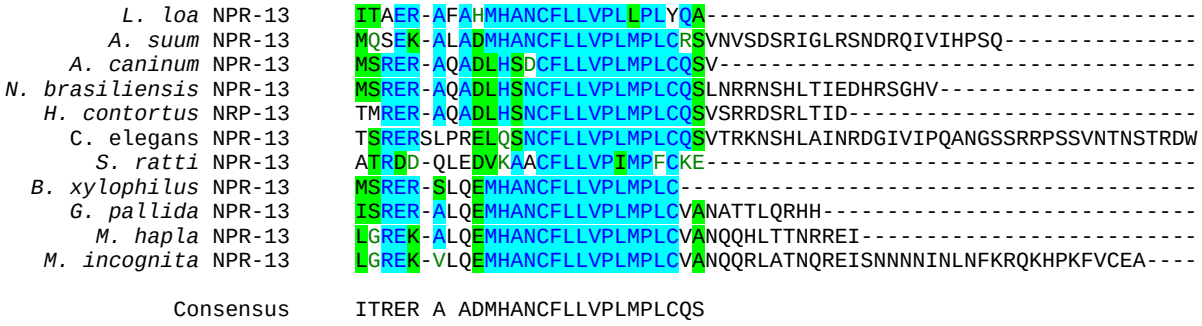
M. incognita NPR-12 ------------------

Consensus

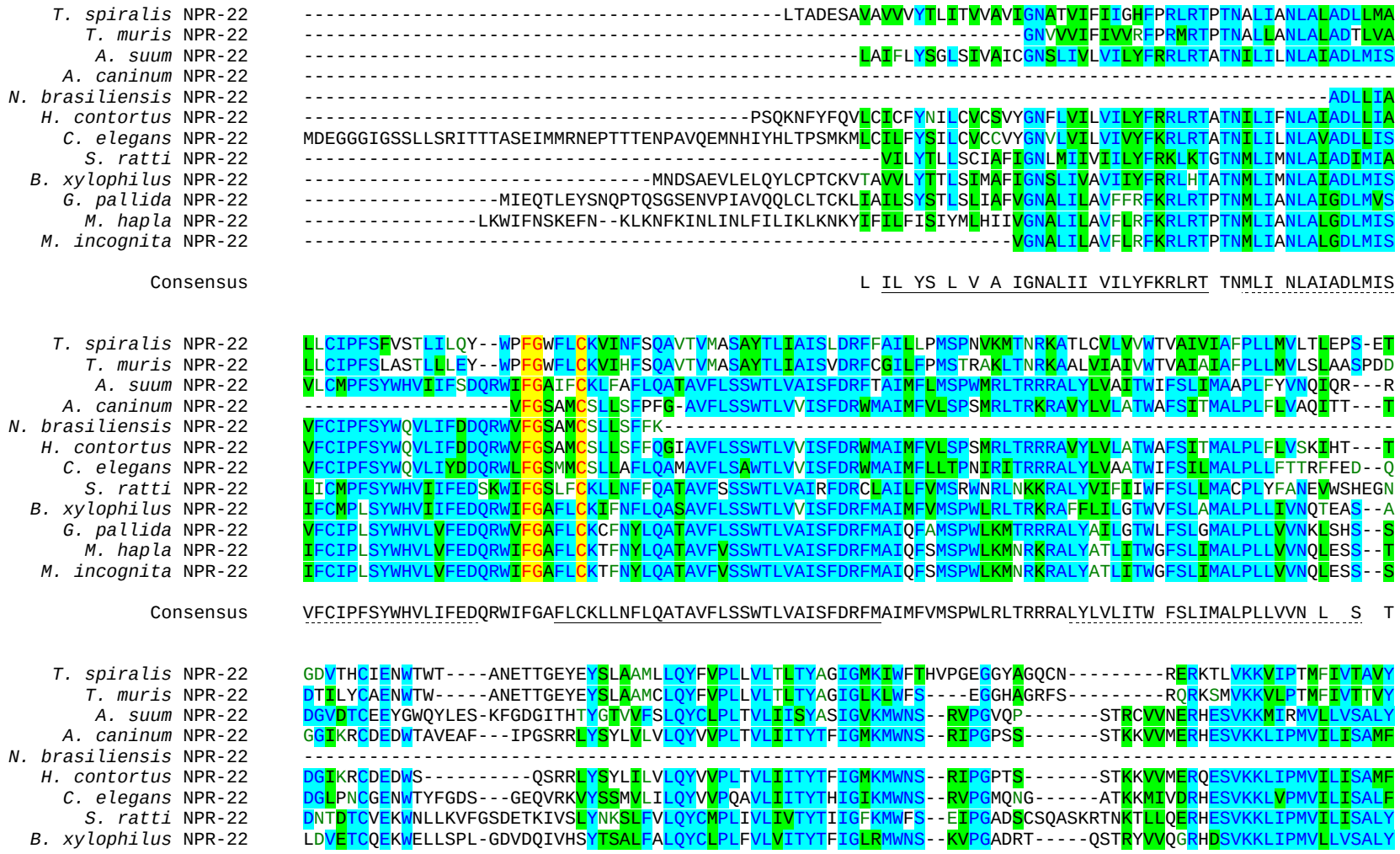
11. NPR-13 homologues

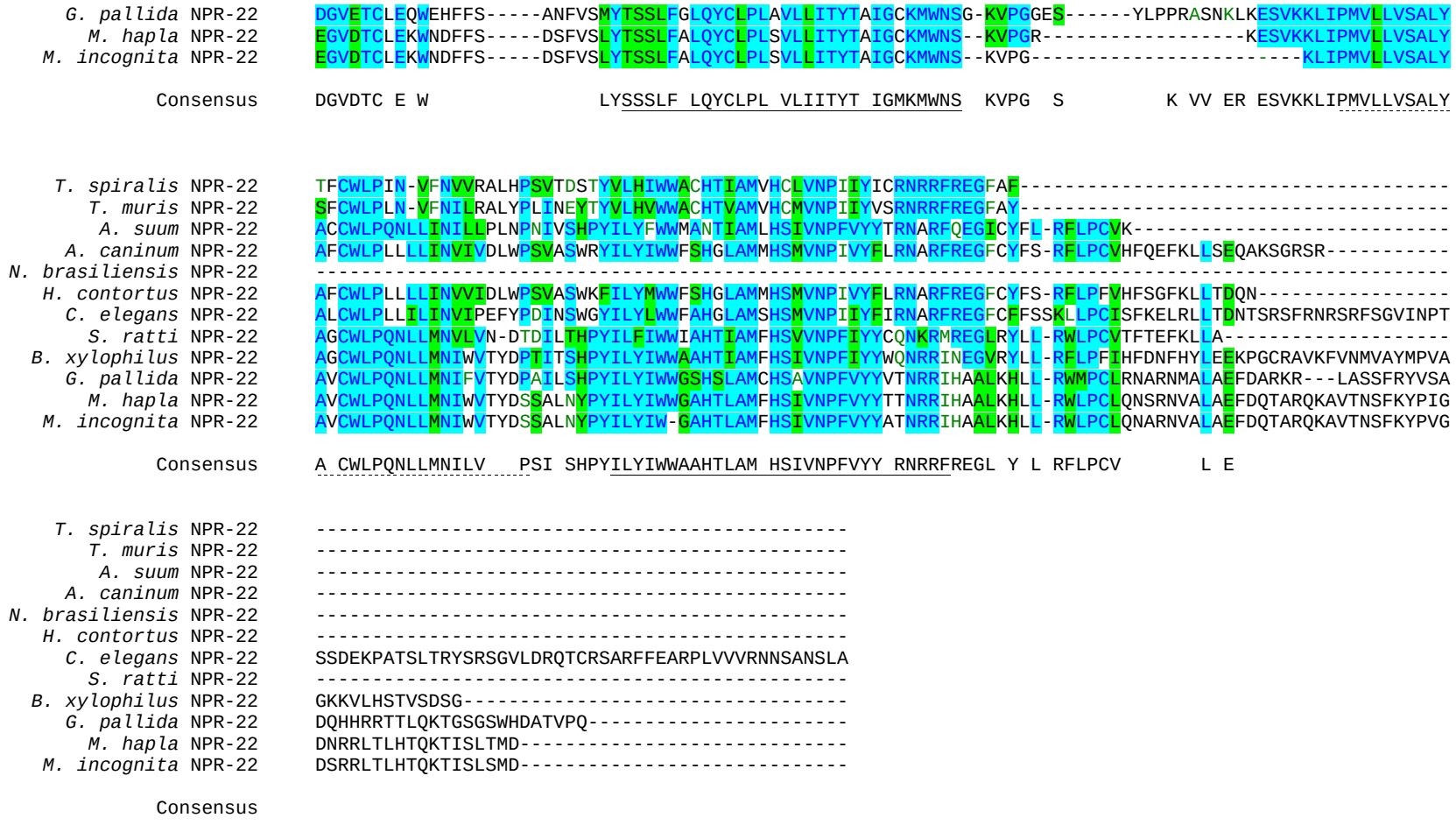



W. bancrofti NPR-13
D. immitis NPR-13
O. volvulus NPR-13
O. ochengi NPR-13
L. loa NPR-13
A. suum NPR-13
A. caninum NPR-13
N. brasiliensis NPR-13
H. contortus NRP-13
C. elegans NPR-13
S. ratti NPR-13
B. xylophilus NPR-13
G. pallida NPR-13
M. hapla NPR-13
M. incognita NPR-13
Consensus
B. malayi NPR-13
W. bancrofti NPR-13
D. immitis NPR-13
O. volvulus NPR-13
O. ochengi NPR-13
L. loa NPR-13
A. suum NPR-13
A. caninum NPR-13
N. brasiliensis NPR-13
H. contortus NRP-13
C. elegans NPR-13
S. ratti NPR-13
B. xylophilus NPR-13
G. pallida NPR-13
M. hapla NPR-13
M. incognita NPR-13
Consensus
B. malayi NPR-13
W. bancrofti NPR-13
D. immitis NPR-13
O. volvulus NPR-13
O. ochengi NPR-13

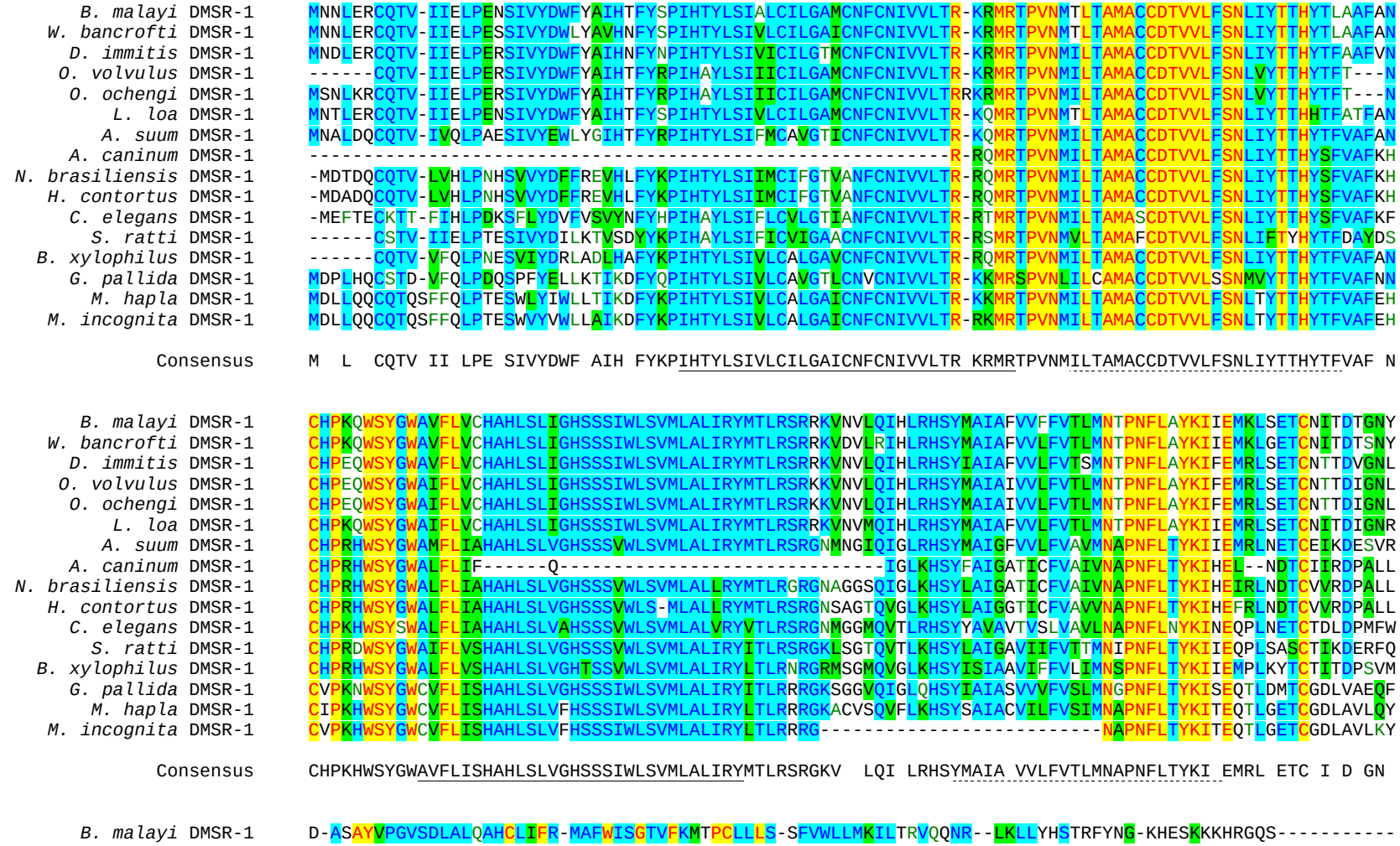

L. loa NPR-13 ITAER-AFAHMHANCFLLVPLLPLYQA
A. suum NPR-13 MQSEK-ALADMHANCFLLVPLMPLCRSVNVSDSRIGLRSNDRQIVIHPSQ
A. caninum NPR-13 MSRER-AQADLHSDCFLLVPLMPLCQSV
N. brasiliensis NPR-13 MSRER-AQADLHSNCFLLVPLMPLCQSLNRRNSHLTIEDHRSGHV
H. contortus NRP-13 TMRER-AQADLHSNCFLLVPLMPLCQSVSRRDSRLTID
C. elegans NPR-13 TSRERSLPRELQSNCFLLVPLMPLCQSVTRKNSHLAINRDGIVIPQANGSSRRPSSVNTNSTRDW
S. ratti NPR-13 ATRDD-QLEDVKAACFLLVPIMPFCKE
B. xylophilus NPR-13 MSRER-SLQEMHANCFLLVPLMPLC
G. pallida NPR-13 ISRER-ALQEMHANCFLLVPLMPLCVANATTLQRHH
M. hapla NPR-13 LGREK-ALQEMHANCFLLVPLMPLCVANQQHLTTNRREI
M. incognita NPR-13 LGREK-VLQEMHANCFLLVPLMPLCVANQQRLATNQREISNNNNINLNFKRQKHPKFVCEA----
Consensus ITRER A ADMHANCFLLVPLMPLCQS

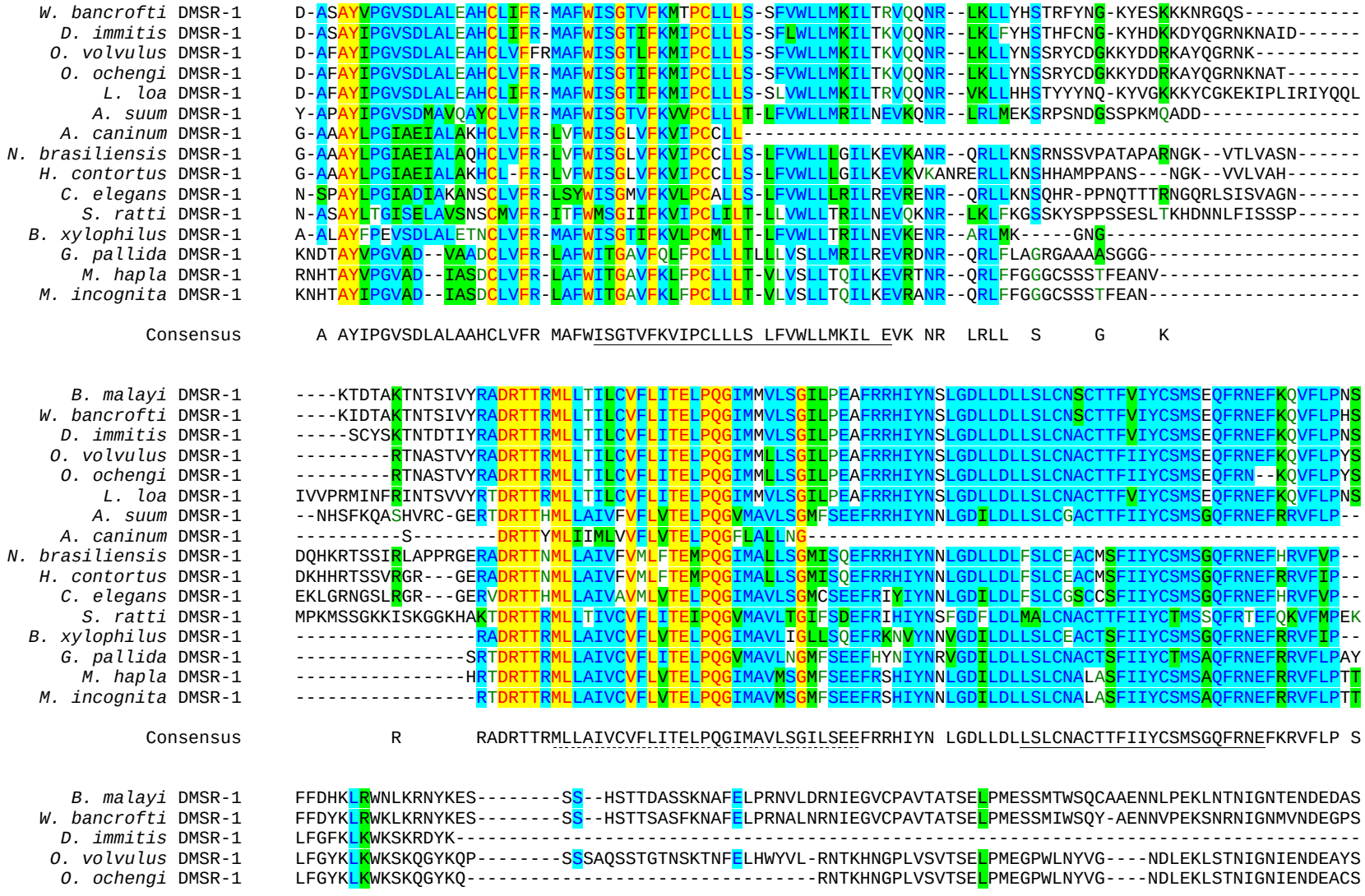
12. NPR-22 homologues




G. pallida NPR-22 DGVETCLEQWEHFFS-----ANFVSMYTSSLFGLQYCLPLAVLLITYTAIGCKMWNSG-KVPGGES------YLPPRASNKLKESVKKLIPMVLLVSALY
M. hapla NPR-22 EGVDTCLEKWNDFFS-----DSFVSLYTSSLFALQYCLPLSVLLITYTAIGCKMWNS--KVPGR-----------------KESVKKLIPMVLLVSALY
M. incognita NPR-22 EGVDTCLEKWNDFFS-----DSFVSLYTSSLFALQYCLPLSVLLITYTAIGCKMWNS--KVPG----------------------KLIPMVLLVSALY
Consensus DGVDTC E W LYSSSLF LQYCLPL VLIITYT IGMKMWNS KVPG S K VV ER ESVKKLIPMVLLVSALY
T. spiralis NPR-22 TFCWLPIN-VFNVVRALHPSVTDSTYVLHIWWACHTIAMVHCLVNPIIYICRNRRFREGFAF-------------------------------------
T. muris NPR-22 SFCWLPLN-VFNILRALYPLINEYTYVLHVWWACHTVAMVHCMVNPIIYVSRNRRFREGFAY-------------------------------------
A. suum NPR-22 ACCWLPQNLLINILLPLNPNIVSHPYILYFWWMANTIAMLHSIVNPFVYYTRNARFQEGICYFL-RFLPCVK----------------------------
A. caninum NPR-22 AFCWLPLLLLINVIVDLWPSVASWRYILYIWWFSHGLAMMHSMVNPIVYFLRNARFREGFCYFS-RFLPCVHFQEFKLLSEQAKSGRSR-----------
N. brasiliensis NPR-22 ----------
H. contortus NPR-22 AFCWLPLLLLINVVIDLWPSVASWKFILYMWWFSHGLAMMHSMVNPIVYFLRNARFREGFCYFS-RFLPFVHFSGFKLLTDQN-----------------
C. elegans NPR-22 ALCWLPLLILINVIPEFYPDINSWGYILYLWWFAHGLAMSHSMVNPIIYFIRNARFREGFCFFSSKLLPCISFKELRLLTDNTSRSFRNRSRFSGVINPT
S. ratti NPR-22 AGCWLPQNLLMNVLVN-DTDILTHPYILFIWWIAHTIAMFHSVVNPFIYYCQNKRMREGLRYLL-RWLPCVTFTEFKLLA-------------------
B. xylophilus NPR-22 AGCWLPQNLLMNIWVTYDPTITSHPYILYIWWAAHTIAMFHSIVNPFIYYWQNRRINEGVRYLL-RFLPFIHFDNFHYLEEKPGCRAVKFVNMVAYMPVA
G. pallida NPR-22 AVCWLPQNLLMNIFVTYDPAILSHPYILYIWWGSHSLAMCHSAVNPFVYYVTNRRIHAALKHLL-RWMPCLRNARNMALAEFDARKR---LASSFRYVSA
M. hapla NPR-22 AVCWLPQNLLMNIWVTYDSSALNYPYILYIWWGAHTLAMFHSIVNPFVYYTTNRRIHAALKHLL-RWLPCLQNSRNVALAEFDQTARQKAVTNSFKYPIG
M. incognita NPR-22 AVCWLPQNLLMNIWVTYDSSALNYPYILYIW-GAHTLAMFHSIVNPFVYYATNRRIHAALKHLL-RWLPCLQNARNVALAEFDQTARQKAVTNSFKYPVG
Consensus A CWLPQNLLMNILV PSI SHPYILYIWWAAHTLAM HSIVNPFVYY RNRRFREGL Y L RFLPCV L E
T. spiralis NPR-22 ----------
T. muris NPR-22 ----------
A. suum NPR-22 ----------
A. caninum NPR-22 ----------
N. brasiliensis NPR-22 ----------
H. contortus NPR-22 ----------
C. elegans NPR-22 SSDEKPATSLTRYSRSGVLDRQTCRSARFFEARPLVVVRNNSANSLA
S. ratti NPR-22 ----------
B. xylophilus NPR-22 GKKVLHSTVSDSG----------
G. pallida NPR-22 DQHHRRTTLQKTGSGSWHDATVPQ----------
M. hapla NPR-22 DNRRLTLHTQKTISLTMD----------
M. incognita NPR-22 DSRRLTLHTQKTISLSMD----------
Consensus

13. DMSR-1 homologues




W. bancrofti DMSR-1 D-ASAYVPGVSDLALEAHCLIFR-MAFWISGTVFKMTPCLLLS-SFVWLLMKILTRVQQNR--LKLLYHSTRFYNG-KYESKKKNRGQS----------
D. immitis DMSR-1 D-ASAYIPGVSDLALEAHCLIFR-MAFWISGTIFKMIPCLLLS-SFLWLLMKILTKVQQNR--LKLFYHSTHFCNG-KYHDKKDYQGRNKNAID------
O. volvulus DMSR-1 D-AFAYIPGVSDLALEAHCLVFFRMAFWISGTLFKMIPCLLLS-SFVWLLMKILTKVQQNR--LKLLYNSSRYCDGKKYDDRKAYQGRNK----------
O. ochengi DMSR-1 D-AFAYIPGVSDLALEAHCLVFR-MAFWISGTIFKMIPCLLLS-SFVWLLMKILTKVQQNR--LKLLYNSSRYCDGKKYDDRKAYQGRNKNAT-------
L. loa DMSR-1 D-AFAYIPGVSDLALEAHCLIFR-MAFWISGTIFKMIPCLLLS-SLVWLLMKILTRVQQNR--VKLLHHSTYYYNQ-KYVGKKKYCGKEKIPLIRIYQQL
A. suum DMSR-1 Y-APAYIPGVSDMAVQAYCLVFR-MAFWISGTVFKVVPCLLLT-LFVWLLMRILNEVKQNR--LRLMEKSRPSNDGSSPKMQADD--------------
A. caninum DMSR-1 G-AAAYLPGIAEIALAKHCLVFR-LVFWISGLVFKVIPCCLL----------
N. brasiliensis DMSR-1 G-AAAYLPGIAEIALAQHCLVFR-LVFWISGLVFKVIPCCLLS-LFVWLLLGILKEVKANR--QRLLKNSRNSSVPATAPARNGK--VTLVASN------
H. contortus DMSR-1 G-AAAYLPGIAEIALAKHCL-FR-LVFWISGLVFKVIPCCLLS-LFVWLLLGILKEVKVKANRERLLKNSHHAMPPANS---NGK--VVLVAH-------
C. elegans DMSR-1 N-SPAYLPGIADIAKANSCLVFR-LSYWISGMVFKVLPCALLS-LFVWLLLRILREVRENR--QRLLKNSQHR-PPNQTTTRNGQRLSISVAGN------
S. ratti DMSR-1 N-ASAYLTGISELAVSNSCMVFR-ITFWMSGIIFKVIPCLILT-LLVWLLTRILNEVQKNR--LKLFKGSSKYSPPSSESLTKHDNNLFISSSP------
B. xylophilus DMSR-1 A-ALAYFPEVSDLALETNCLVFR-MAFWISGTIFKVLPCMLLT-LFVWLLTRILNEVKENR--ARLMK-----GNG----------
G. pallida DMSR-1 KNDTAYVPGVAD--VAADCLVFR-LAFWITGAVFQLFPCLLLTLLLVSLLMRILREVRDNR--QRLFLAGRGAAAASGGG----------
M. hapla DMSR-1 RNHTAYVPGVAD--IASDCLVFR-LAFWITGAVFKLFPCLLLT-VLVSLLTQILKEVRTNR--QRLFFGGGCSSSTFEANV----------
M. incognita DMSR-1 KNHTAYIPGVAD--IASDCLVFR-LAFWITGAVFKLFPCLLLT-VLVSLLTQILKEVRANR--QRLFFGGGCSSSTFEAN----------
Consensus A AYIPGVSDLALAAHCLVFR MAFWISGTVFKVIPCLLLS LFVWLLMKIL EVK NR LRLL S G K
B. malayi DMSR-1 ----KTDTAKTNTSIVYRADRTTRMLLTILCVFLITELPQGIMMVLSGILPEAFRRHIYNSLGDLLDLLSLCNSCTTFVIYCSMSEQFRNEFKQVFLPNS
W. bancrofti DMSR-1 ----KIDTAKTNTSIVYRADRTTRMLLTILCVFLITELPQGIMMVLSGILPEAFRRHIYNSLGDLLDLLSLCNSCTTFVIYCSMSEQFRNEFKQVFLPHS
D. immitis DMSR-1 -----SCYSKTNTDTIYRADRTTRMLLTILCVFLITELPQGIMMVLSGILPEAFRRHIYNSLGDLLDLLSLCNACTTFVIYCSMSEQFRNEFKQVFLPNS
O. volvulus DMSR-1 ---------RTNASTVYRADRTTRMLLTILCVFLITELPQGIMMLLSGILPEAFRRHIYNSLGDLLDLLSLCNACTTFIIYCSMSEQFRNEFKQVFLPYS
O. ochengi DMSR-1 ---------RTNASTVYRADRTTRMLLTILCVFLITELPQGIMMLLSGILPEAFRRHIYNSLGDLLDLLSLCNACTTFIIYCSMSEQFRN--KQVFLPYS
L. loa DMSR-1 IVVPRMINFRINTSVVYRTDRTTRMLLTILCVFLITELPQGIMMVLSGILPEAFRRHIYNSLGDLLDLLSLCNACTTFVIYCSMSEQFRNEFKQVFLPNS
A. suum DMSR-1 --NHSFKQASHVRC-GERTDRTTHMLLAIVFVFLVTELPQGVMAVLSGMFSEEFRRHIYNNLGDILDLLSLCGACTTFIIYCSMSGQFRNEFRRVFLP--
A. caninum DMSR-1 ----------S---------DRTTYMLLIIMLVVFLVTELPQGFLALLNG----------
N. brasiliensis DMSR-1 DQHKRTSSIRLAPPRGERADRTTNMLLAIVFVMLFTEMPQGIMALLSGMISQEFRRHIYNNLGDLLDLFSLCEACMSFIIYCSMSGQFRNEFHRVFVP--
H. contortus DMSR-1 DKHHRTSSVRGR---GERADRTTNMLLAIVFVMLFTEMPQGIMALLSGMISQEFRRHIYNNLGDLLDLFSLCEACMSFIIYCSMSGQFRNEFRRVFIP--
C. elegans DMSR-1 EKLGRNGSLRGR---GERVDRTTHMLLAIVAVMLVTELPQGIMAVLSGMCSEEFRIYIYNNLGDILDLFSLCGSCCSFIIYCSMSGQFRNEFHRVFVP--
S. ratti DMSR-1 MPKMSSGKKISKGGKHAKTDRTTRMLLTIVCVFLITEIPQGVMAVLTGIFSDEFRIHIYNSFGDFLDLMALCNACTTFIIYCTMSSQFRTEFQKVFMPEK
B. xylophilus DMSR-1 ----------RADRTTRMLLAIVCVFLVTELPQGIMAVLIGLLSQEFRKNVYNNVGDILDLLSLCEACTSFIIYCSMSGQFRNEFRRVFIP--
G. pallida DMSR-1 ----------SRTDRTTRMLLAIVCVFLITELPQGVMAVLNGMFSEEFHYNIYNRVGDILDLLSLCNACTSFIIYCTMSAQFRNEFRRVFLPAY
M. hapla DMSR-1 ----------HRTDRTTRMLLAIVCVFLVTELPQGIMAVMSGMFSEEFRSHIYNNLGDILDLLSLCNALASFIIYCSMSAQFRNEFRRVFLPTT
M. incognita DMSR-1 ----------RTDRTTRMLLAIVCVFLVTELPQGIMAVMSGMFSEEFRSHIYNNLGDILDLLSLCNALASFIIYCSMSAQFRNEFRRVFLPTT
Consensus R RADRTTRMLLAIVCVFLITELPQGIMAVLSGILSEEFRRHIYN LGDLLDLLSLCNACTTFIIYCSMSGQFRNEFKRVFLP S
B. malayi DMSR-1 FFDHKLRWNLKRNYKES--------SS--HSTTDASSKNAFELPRNVLDRNIEGVCPAVTATSELPMESSMTWSQCAAENNLPEKLNTNIGNTENDEDAS
W. bancrofti DMSR-1 FFDYKLRWKLKRNYKES--------SS--HSTTSASFKNAFELPRNALNRNIEGVCPAVTATSELPMESSMIWSQY-AENNVPEKSNRNIGNMVNDEGPS
D. immitis DMSR-1 LFGFKLKWKSKRDYK----------
O. volvulus DMSR-1 LFGYKLKWKSKQGYKQP--------SSSAQSSTGTNSKTNFELHWYVL-RNTKHNGPLVSVTSELPMEGPWLNYVG----NDLEKLSTNIGNIENDEAYS
O. ochengi DMSR-1 LFGYKLKWKSKQGYKQ----------RNTKHNGPLVSVTSELPMEGPWLNYVG----NDLEKLSTNIGNIENDEACS

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         L. loa DMSR-1     LFGYKLTRKLQWNHKES--------SSSTHSSNGRNSKNIFELPANILNRNTKDVCPMVTATSELLMESSLT---------------------------
        A. suum DMSR-1     SSVLCFLSRSNRRSSEPLVKQCYLRPSDAANGNTSTAERSITMTLVGSVASIRKVTKSNNPPASVCTDSLQRMSSSDSVDASPTPKSPPSTAAFNFQSAS
    A. caninum DMSR-1     ----------------------------------------------------------------------------------------------------
N. brasiliensis DMSR-1     KSVHCVKRP-VSVR----------RPSETY--TKMTYLKPTEVYEN---GSSTYSELDRSGAVKVIGNQSSSR----------LDISRGTPSPGFYGSST
   H. contortus DMSR-1     KSMHCLERP-PSIR----------RPSDAY--TKMTYLRPTDMYEN---GSSTYSELDKNAVVKVG-KLISNF----------IELSFGEIVN-SYGLSA
     C. elegans DMSR-1     AKVRCLRMSSPSIR----------RPSDAYSTTKMTFLKPNEKNGNGMNGNGTYSEDTRSASVKMVGIQVRRNSTEITRMTGCDSITPCSPMPTSFPSSP
       S. ratti DMSR-1     LNNACKIPWNKRSR----------RESVPFTENK-----------------------------------------------------------------
  B. xylophilus DMSR-1     AQVSCWWSPQTAR-----------RYSDALFSKTGTQFLQ-------------------------------------------------------------
     G. pallida DMSR-1     GRMKCWHRFV-------------------------------------------------------------------------------------------
       M. hapla DMSR-1     QRVKCWHQLFVLTR----------RTRNDAKRNENKLERKQES--GCE-----------------------------------------------------
   M. incognita DMSR-1     QRVKCWRQLLVLTR----------RRKRNDVEN-IKFEGRQESGGGCE-----------------------------------------------------

              Consensus       V CLK               R S             E                   L


      B. malayi DMSR-1     LLHSSA-------------------------------------------------
   W. bancrofti DMSR-1     LLHSSA-------------------------------------------------
     D. immitis DMSR-1     -------------------------------------------------------
    O. volvulus DMSR-1     V------------------------------------------------------
     O. ochengi DMSR-1     V------------------------------------------------------
         L. loa DMSR-1     -------------------------------------------------------
        A. suum DMSR-1     TARISSASHETLDDKSDRLDEKAELLSESCPTKRPCAGILDNKKKGRTLEARYHVV
    A. caninum DMSR-1     -------------------------------------------------------
N. brasiliensis DMSR-1     LNEAT--AAGFDDERSRLID-----------------------------------
   H. contortus DMSR-1     LEMVP--LTVTVIPNS---------------------------------------
     C. elegans DMSR-1     LPPIRSGEDESTDETSHLLNSSGPNSTASADGIRGHFQNI---------------
       S. ratti DMSR-1     -------------------------------------------------------
  B. xylophilus DMSR-1     -------------------------------------------------------
     G. pallida DMSR-1     -------------------------------------------------------
       M. hapla DMSR-1     -------------------------------------------------------
   M. incognita DMSR-1     -------------------------------------------------------

              Consensus
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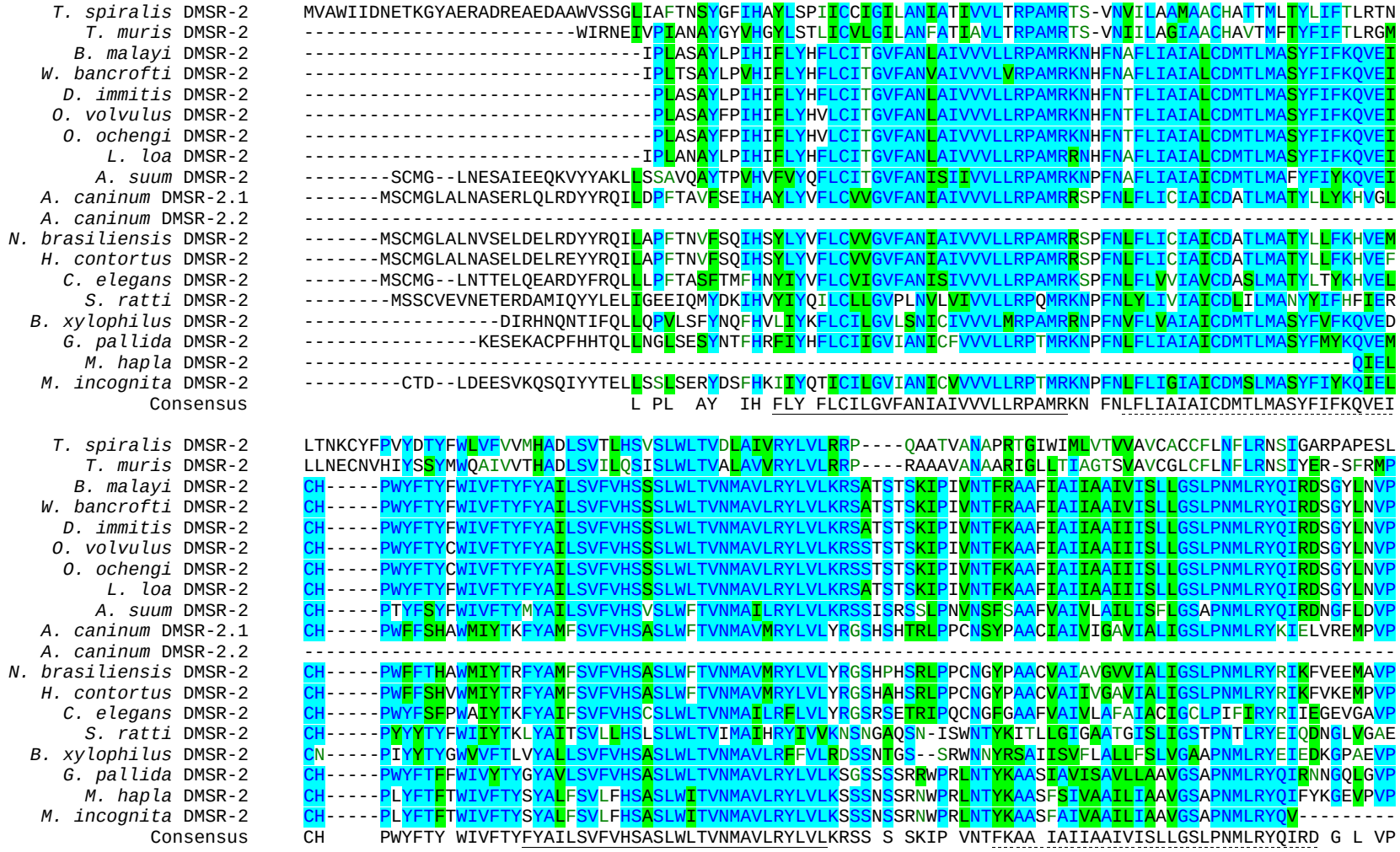
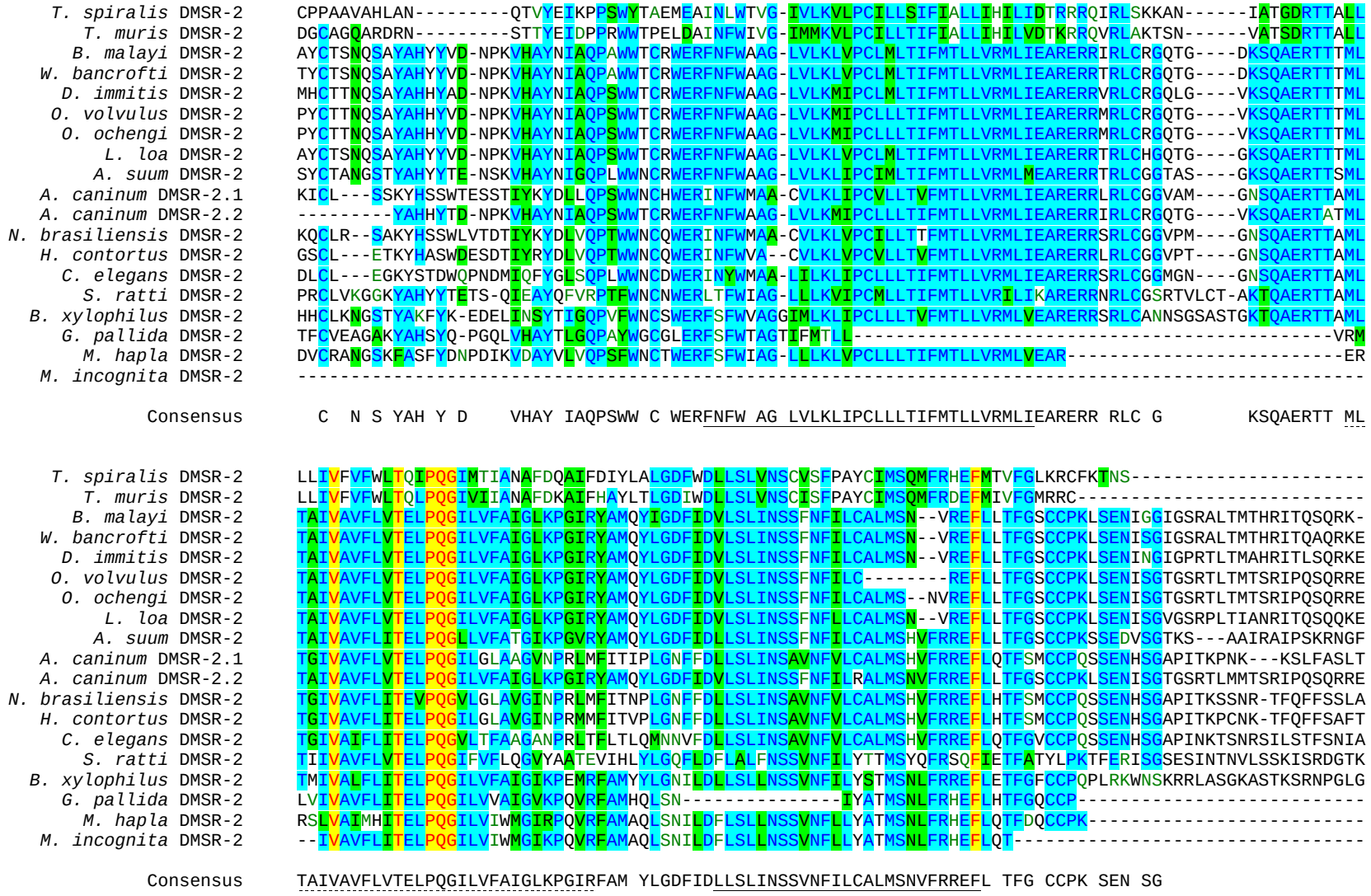
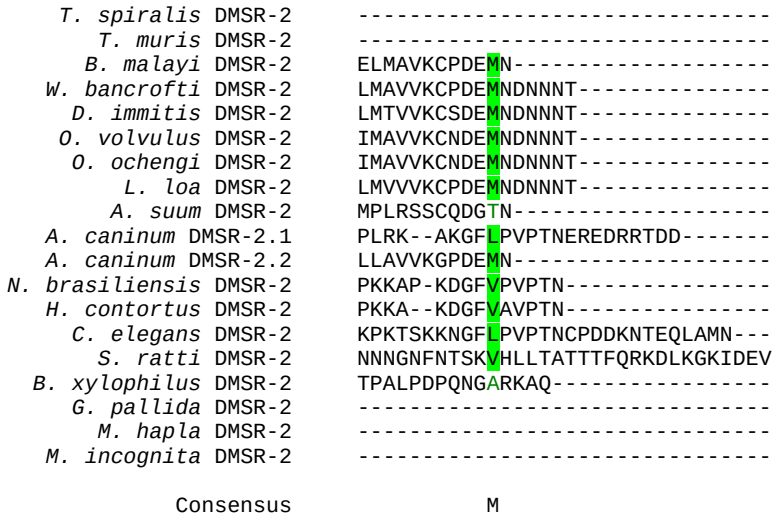
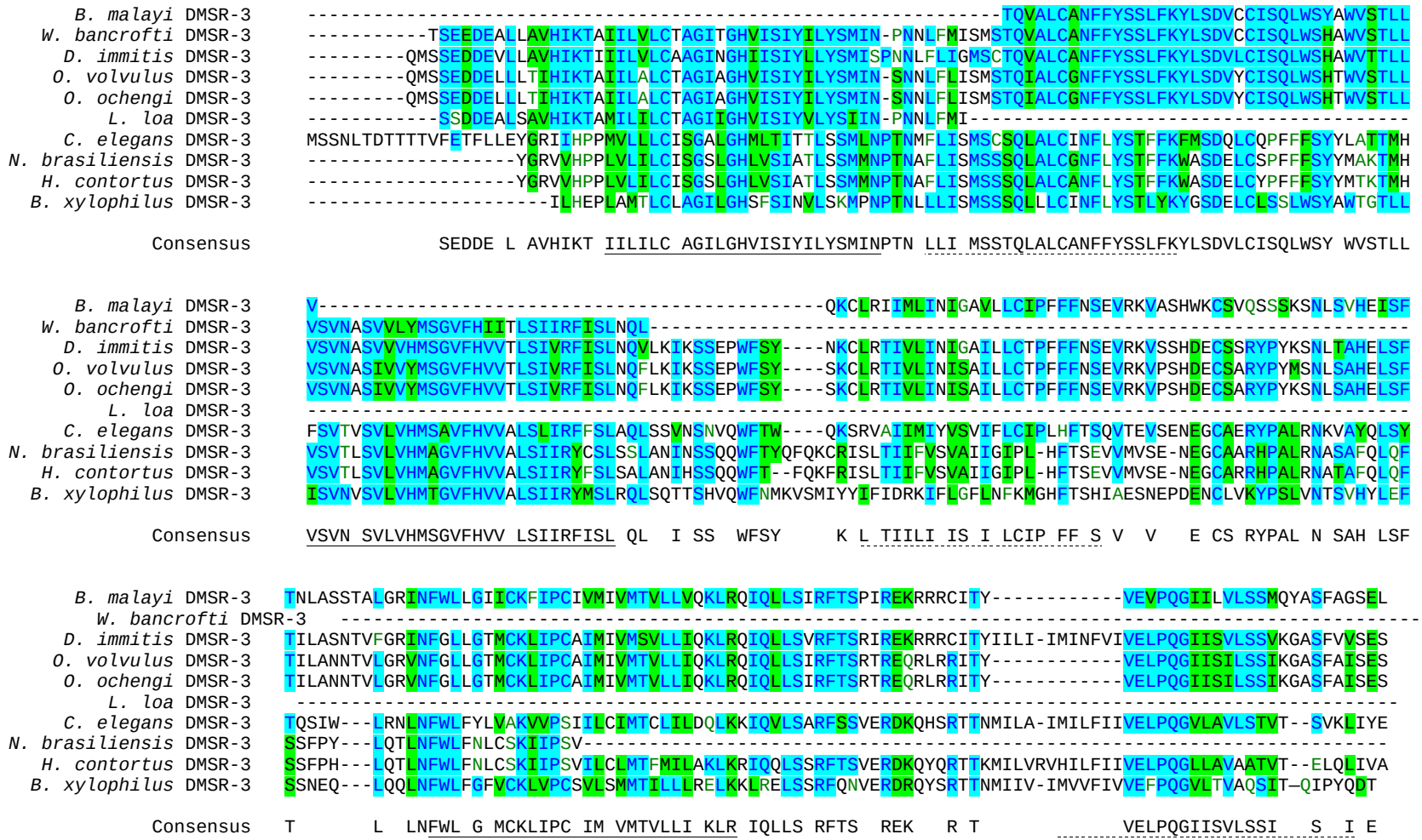
14. DMSR-2 homologues

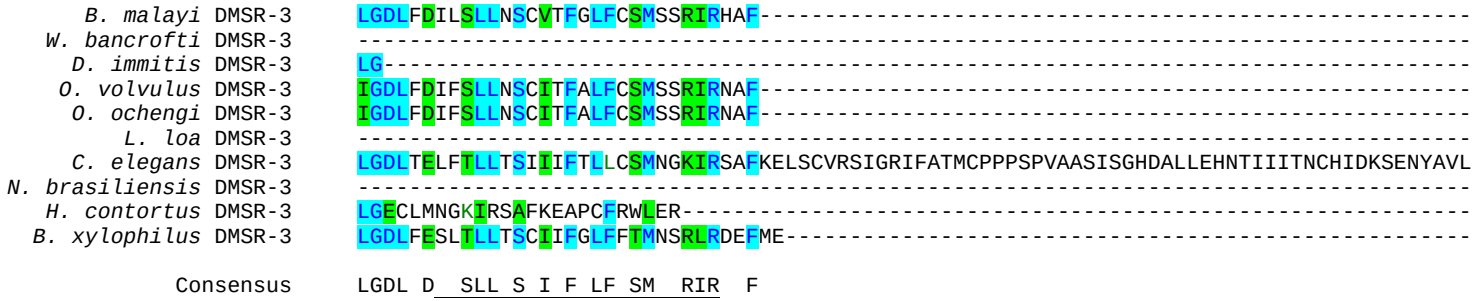



T. spiralis DMSR-2 CPPAAVAHLAN---------QTVYEIKPPSWYTAEMEAINLWTVG-IVLKVLPCILLSIFIALLIHILIDTRRRQIRLSKKAN------IATGDRTTALL
T. muris DMSR-2 DGCAGQARDRN---------STTYEIDPPRWWTPELDAINFWIVG-IMMKVLPCILLTIFIALLIHILVDTKRRQVRLAKTSN------VATSDRTTALL
B. malayi DMSR-2 AYCTSNQSAYAHYYVD-NPKVHAYNIAQPAWWTCRWERFNFWAAG-LVLKLVPCLMLTIFMTLLVRMLIEARERRIRLCRGQTG----DKSQAERTTTML
W. bancrofti DMSR-2 TYCTSNQSAYAHYYVD-NPKVHAYNIAQPAWWTCRWERFNFWAAG-LVLKLVPCLMLTIFMTLLVRMLIEARERRTRLCRGQTG----DKSQAERTTTML
D. immitis DMSR-2 MHCTTNQSAYAHHYAD-NPKVHAYNIAQPSWWTCRWERFNFWAAG-LVLKMIPCLMLTIFMTLLVRMLIEARERRVRLCRGQLG----VKSQAERTTTML
O. volvulus DMSR-2 PYCTTNQSAYAHHYVD-NPKVHAYNIAQPSWWTCRWERFNFWAAG-LVLKMIPCLLLTIFMTLLVRMLIEARERRMRLCRGQTG----VKSQAERTTTML
O. ochengi DMSR-2 PYCTTNQSAYAHHYVD-NPKVHAYNIAQPSWWTCRWERFNFWAAG-LVLKMIPCLLLTIFMTLLVRMLIEARERRMRLCRGQTG----VKSQAERTTTML
L. loa DMSR-2 AYCTSNQSAYAHYYVD-NPKVHAYNIAQPSWWTCRWERFNFWAAG-LVLKLVPCLMLTIFMTLLVRMLIEARERRTRLCHGQTG----GKSQAERTTTML
A. suum DMSR-2 SYCTANGSTYAHYYTE-NSKVHAYNIGQPLWWNCRWERFNFWAAG-LVLKLIPCIMLTIFMTLLVRMLMEARERRTRLCGGTAS----GKSQAERTTSML
A. caninum DMSR-2.1 KICL---SSKYHSSWTESSTIYKYDLLQPSWWNCHWERINFWMAA-CVLKLIPCVLLTVFMTLLVRMLIEARERRLRLCGGVAM----GNSQAERTTAML
A. caninum DMSR-2.2 ---------YAHHYTD-NPKVHAYNIAQPSWWTCRWERFNFWAAG-LVLKMIPCLLLTIFMTLLVRMLIEARERRIRLCRGQTG----VKSQAERTATML
N. brasiliensis DMSR-2 KQCLR--SAKYHSSWLVTDTIYKYDLVQPTWWNCQWERINFWMAA-CVLKLVPCILLTTFMTLLVRMLIEARERRSRLCGGVPM----GNSQAERTTAML
H. contortus DMSR-2 GSCL---ETKYHASWDESDTIYRYDLVQPTWWNCQWERINFWVA--CVLKLVPCVLLTVFMTLLVRMLIEARERRLRLCGGVPT----GNSQAERTTAML
C. elegans DMSR-2 DLCL---EGKYSTDWQPNDMIQFYGLSQPLWWNCDWERINYWMAA-LILKLIPCLLLTIFMTLLVRMLIEARERRSRLCGGMGN----GNSQAERTTAML
S. ratti DMSR-2 PRCLVKGGKYAHYYTETS-QIEAYQFVRPTFWNCNWERLTFWIAG-LLLKVIPCMLLTIFMTLLVRILIKARERRNRLCGSRTVLCT-AKTQAERTTAML
B. xylophilus DMSR-2 HHCLKNGSTYAKFYK-EDELINSYTIGQPVFWNCSWERFSFWVAGGIMLKLIPCLLLTVFMTLLVRMLVEARERRSRLCANNSGSASTGKTQAERTTAML
G. pallida DMSR-2 TFCVEAGAKYAHSYQ-PGQLVHAYTLGQPAYWGCGLERFSFWTAGTIFMTLL----------VRM
M. hapla DMSR-2 DVCRANGSKFASFYDNPDIKVDAYVLVQPSFWNCTWERFSFWIAG-LLLKLVPCLLLTIFMTLLVRMLVEAR----------ER
M. incognita DMSR-2 ----------
Consensus C N S YAH Y D VHAY IAQPSWW C WERFNFW AG LVLKLIPCLLLTIFMTLLVRMLIEARERR RLC G KSQAERTT ML
T. spiralis DMSR-2 LLIVFVFWLTQIPQGIMTIANAFDQAIFDIYLALGDFWDLLSLVNSCVSFPAYCIMSQMFRHEFMTVFGLKRCFKTNS----------
T. muris DMSR-2 LLIVFVFWLTQLPQGIVIIANAFDKAIFHAYLTLGDIWDLLSLVNSCISFPAYCIMSQMFRDEFMIVFGMRRC----------
B. malayi DMSR-2 TAIVAVFLVTELPQGILVFAIGLKPGIRYAMQYIGDFIDVLSLINSSFNFILCALMSN--VREFLLTFGSCCPKLSENIGGIGSRALTMTHRITQSQRK-
W. bancrofti DMSR-2 TAIVAVFLVTELPQGILVFAIGLKPGIRYAMQYLGDFIDVLSLINSSFNFILCALMSN--VREFLLTFGSCCPKLSENISGIGSRALTMTHRITQAQRKE
D. immitis DMSR-2 TAIVAVFLVTELPQGILVFAIGLKPGIRYAMQYLGDFIDVLSLINSSFNFILCALMSN--VREFLLTFGSCCPKLSENINGIGPRTLTMAHRITLSQRKE
O. volvulus DMSR-2 TAIVAVFLVTELPQGILVFAIGLKPGIRYAMQYLGDFIDVLSLINSSFNFILC--------REFLLTFGSCCPKLSENISGTGSRTLTMTSRIPQSQRRE
O. ochengi DMSR-2 TAIVAVFLVTELPQGILVFAIGLKPGIRYAMQYLGDFIDVLSLINSSFNFILCALMS--NVREFLLTFGSCCPKLSENISGTGSRTLTMTSRIPQSQRRE
L. loa DMSR-2 TAIVAVFLVTELPQGILVFAIGLKPGIRYAMQYLGDFIDVLSLINSSFNFLLCALMSN--VREFLLTFGSCCPKLSENISGVGSRPLTIANRITQSQQKE
A. suum DMSR-2 TAIVAVFLITELPQGLLVFATGIKPGVRYAMQYLGDFIDLLSLINSSFNFILCALMSHVFRREFLLTFGSCCPKSSEDVSGTKS---AAIRAIPSKRNGF
A. caninum DMSR-2.1 TGIVAVFLVTELPQGILGLAAGVNPRLMFITIPLGNFFDLLSLINSAVNFVLCALMSHVFRREFLQTFSMCCPQSSENHSGAPITKPNK---KSLFASLT
A. caninum DMSR-2.2 TAIVAVFLVTELPQGILVFAIGLKPGIRYAMQYLGDFIDVLSLINSSFNFILRALMSNVFRREFLLTFGSCCPKLSENISGTGSRTLMMTSRIPQSQRRE
N. brasiliensis DMSR-2 TGIVAVFLITEVPQGVLGLAVGINPRLMFITNPLGNFFDLLSLINSAVNFVLCALMSHVFRREFLHTFSMCCPQSSENHSGAPITKSSNR-TFQFFSSLA
H. contortus DMSR-2 TGIVAVFLITELPQGILGLAVGINPRMMFITVPLGNFFDLLSLINSAVNFVLCALMSHVFRREFLHTFSMCCPQSSENHSGAPITKPCNK-TFQFFSAFT
C. elegans DMSR-2 TGIVAIFLITELPQGVLTFAAGANPRLTFLTLQMNNVFDLLSLINSAVNFVLCALMSHVFRREFLQTFGVCCPQSSENHSGAPINKTSNRSILSTFSNIA
S. ratti DMSR-2 TIIVAVFLVTELPQGIFVFLQGVYAATEVIHLYLGQFLDFLALFNSSVNFILYTTMSYQFRSQFIETFATYLPKTFERISGSESINTNVLSSKISRDGTK
B. xylophilus DMSR-2 TMIVALFLITELPQGILVFAIGIKPEMRFAMYYLGNILDLLSLLNSSVNFILYSTMSNLFRREFLETFGFCCPQPLRKWNSKRRLASGKASTKSRNPGLG
G. pallida DMSR-2 LVIVAVFLITELPQGILVVAIGVKPQVRFAMHQLSN---------------IYATMSNLFRHEFLHTFGQCCP----------
M. hapla DMSR-2 RSLVAIMHITELPQGILVIWMGIRPQVRFAMAQLSNILDFLSLLNSSVNFLLYATMSNLFRHEFLQTFDQCCPK----------
M. incognita DMSR-2 --IVAVFLITELPQGILVIWMGIKPQVRFAMAQLSNILDFLSLLNSSVNFLLYATMSNLFRHEFLQT----------
Consensus TAIVAVFLVTELPQGILVFAIGLKPGIRFAM YLGDFIDLLSLINSSVNFILCALMSNVFRREFL TFG CCPK SEN SG

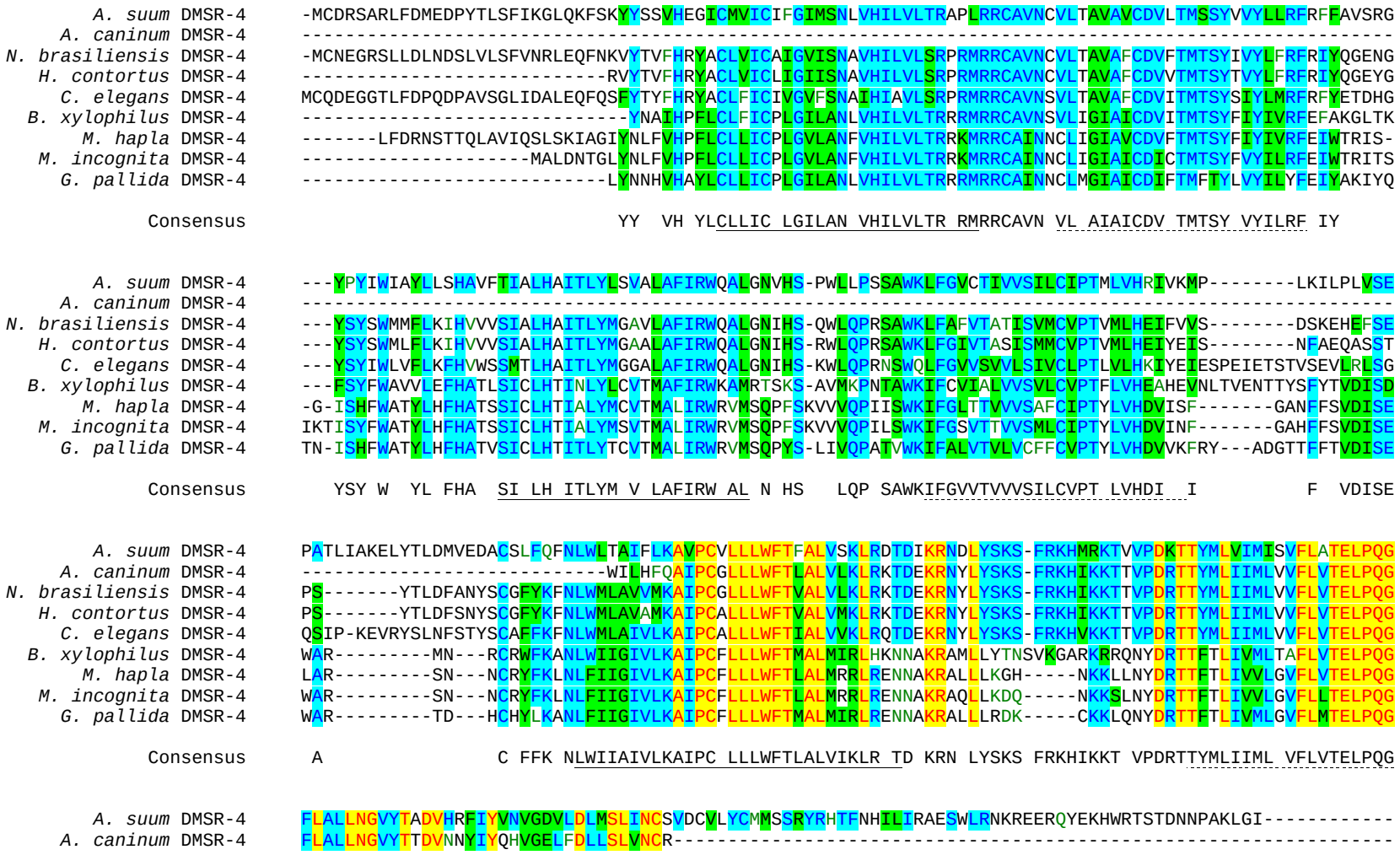

T. spiralis DMSR-2 ----------
T. muris DMSR-2 ----------
B. malayi DMSR-2 ELMAVKCPDEMN----------
W. bancrofti DMSR-2 LMAVVKCPDEMNDNNNT----------
D. immitis DMSR-2 LMTVVKCSDEMNDNNNT----------
O. volvulus DMSR-2 IMAVVKCNDEMNDNNNT----------
O. ochengi DMSR-2 IMAVVKCNDEMNDNNNT----------
L. loa DMSR-2 LMVVVKCPDEMNDNNNT----------
A. suum DMSR-2 MPLRSSCQDGTN----------
A. caninum DMSR-2.1 PLRK--AKGFLPVPTNEREDRRTDD-------
A. caninum DMSR-2.2 LLAVVKGPDEMN----------
N. brasiliensis DMSR-2 PKKAP-KDGFVPVPTN----------
H. contortus DMSR-2 PKKA--KDGFVAVPTN----------
C. elegans DMSR-2 KPKTSKKNGFLPVPTNCPDDKNTEQLAMN---
S. ratti DMSR-2 NNNGNFNTSKVHLLTATTTFQRKDLKGKIDEV
B. xylophilus DMSR-2 TPALPDPQNGARKAQ----------
G. pallida DMSR-2 ----------
M. hapla DMSR-2 ----------
M. incognita DMSR-2 ----------
Consensus M

15. DMSR-3 homologues




B. malayi DMSR-3 LGDLFDILSLLNSCVTFGLFCSMSSRIRHAF----------
W. bancrofti DMSR-3 ----------
D. immitis DMSR-3 LG----------
O. volvulus DMSR-3 IGDLFDIFSLLNSCITFALFCSMSSRIRNAF----------
O. ochengi DMSR-3 IGDLFDIFSLLNSCITFALFCSMSSRIRNAF----------
L. loa DMSR-3 ----------
C. elegans DMSR-3 LGDLTELFTLLTSIIIFTLLCSMNGKIRSAFKELSCVRSIGRIFATMCPPPSPVAASISGHDALLEHNTIIITNCHIDKSENYAVL
N. brasiliensis DMSR-3 ----------
H. contortus DMSR-3 LGECLMNGKIRSAFKEAPCFRWLER----------
B. xylophilus DMSR-3 LGDLFESLTLLTSCIIFGLFFTMNSRLRDEFME----------
Consensus LGDL D SLL S I F LF SM RIR F

16. DMSR-4 homologues



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N. brasiliensis DMSR-4     FLALLNGVYTTDVNNYIYQHVGELFDLLSLVNCSVDFVLYCFMSSRYRQTFGHILIRVESWLRNQSSGWKYSKDLTKVAPPTV----------------
   H. contortus DMSR-4     FLALLNGVYTTDVNNYIYQHVGELFDLLSLVNCSVDFVLYCFMSSRYRQTFGHILIRVESWLRNQSSGCKYSKEFSKTPPPTI----------------
     C. elegans DMSR-4     FLALLNGLYTGDVNIYIYKNLSELLDFLSLINCSVDFLLYCVMSSRYRQTFGHMLIRVESWLRNHGERRRLAREIKKKLPAPVGV--------------
  B. xylophilus DMSR-4     MLTMLNGVYTNDVHTVIYMNLANVLDVLSLINCYVGFIAYCFLCSKYRQTFMMMIL----------------------------------------
       M. hapla DMSR-4     VLTILNGVFTNDVHTVFYMNLANILDLLSLINCYVGFIAYCFLCTKYQQTFIMMIITWLE---------------------------------------
   M. incognita DMSR-4     VLTILNGIFTNDVHTVFYMNLANLLDLLSLINCYVGFLAYCFLCTKYQQTFVLMIFNCISTLFKCFGVKRNTVITNQERRKRASRKQSAHKRSLVRSSYN
     G. pallida DMSR-4     ILTILNGIYTNDVHSVFYMNLANLLDILSLINCYVGFMAYCFLCSKYRQTFGLMILTSLDSYRKLVCHEKYGQQGQKHRRSHRHHRNSQNE--LLRRPEN

                Consensus   FLALLNGVYT DVH YIYMNLAELLDLLSLINC V FV YCFL SKYRQTF  MII   S LR      K


       A. suum DMSR-4     ------------
    A. caninum DMSR-4     ------------
N. brasiliensis DMSR-4     ------------
   H. contortus DMSR-4     ------------
     C. elegans DMSR-4     ------------
  B. xylophilus DMSR-4     ------------
       M. hapla DMSR-4     ------------
   M. incognita DMSR-4     YSKTDCEMPQRH
     G. pallida DMSR-4     ------------

                Consensus
```
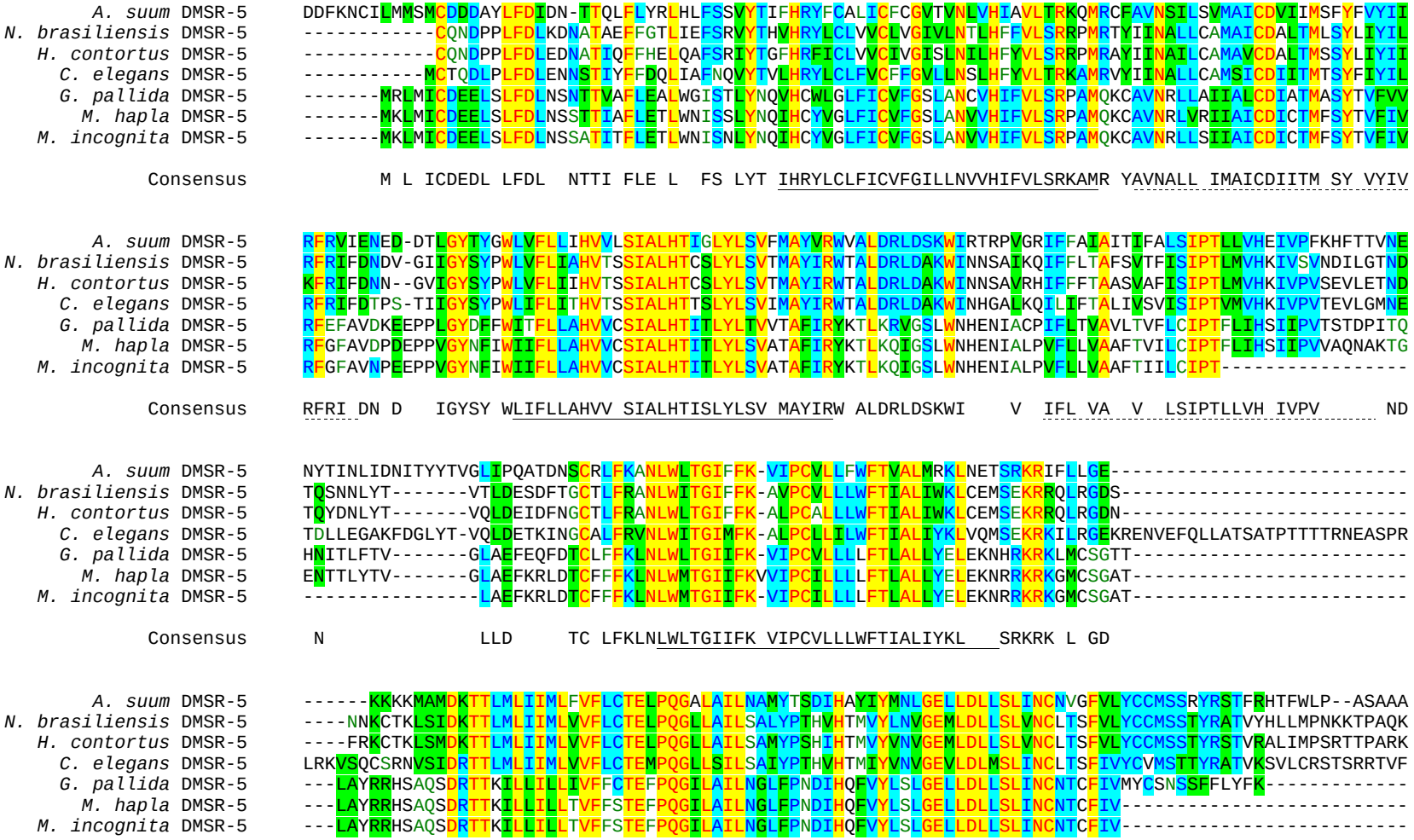

17. DMSR-5 homologues



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            Consensus       LA KR  LSIDRTTLMLIIMLVVFLCTELPQGILAILNALYPSDIH FVYLNLGELLDLLSLINCNT FIVYCCMSSTYRAT K

        A. suum DMSR-5     SAISANFRKFSFSV-
N. brasiliensis DMSR-5     TTLAAQSLKLLIS--
   H. contortus DMSR-5     NALAAQSLKLLMS--
     C. elegans DMSR-5     KNTHLLLDSYRIQVS
     G. pallida DMSR-5     ---------------
       M. hapla DMSR-5     ---------------
   M. incognita DMSR-5     ---------------

            Consensus
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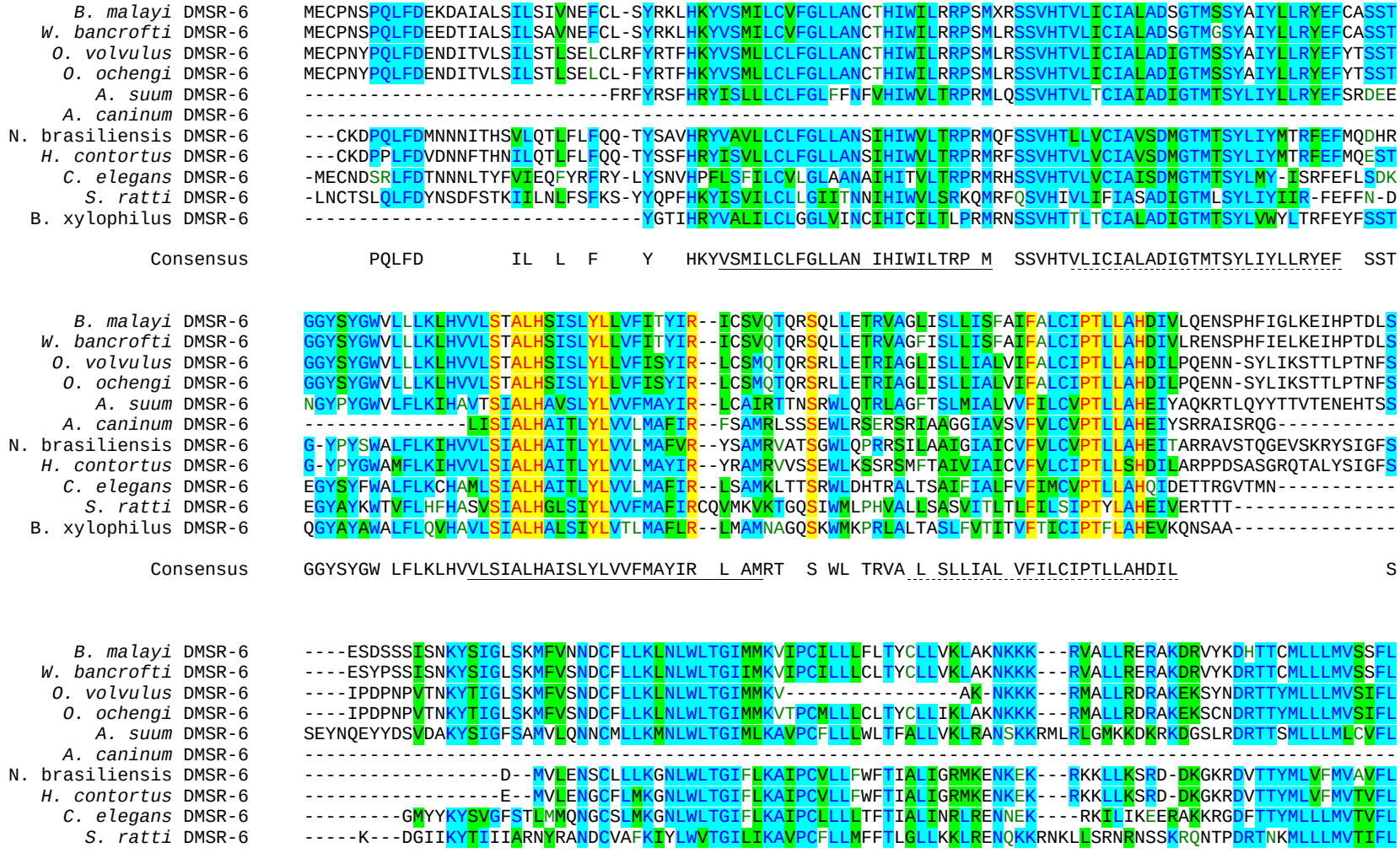
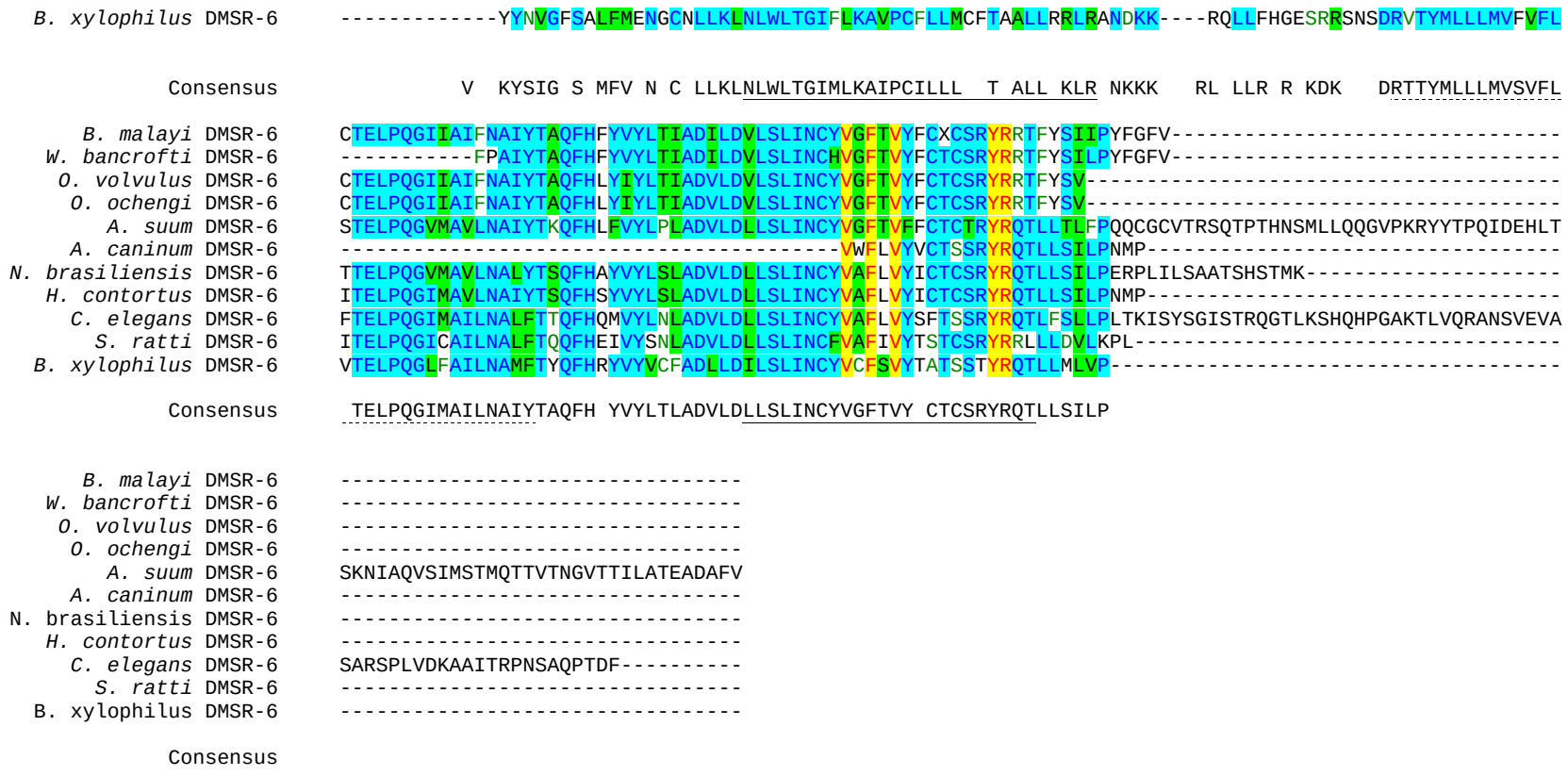
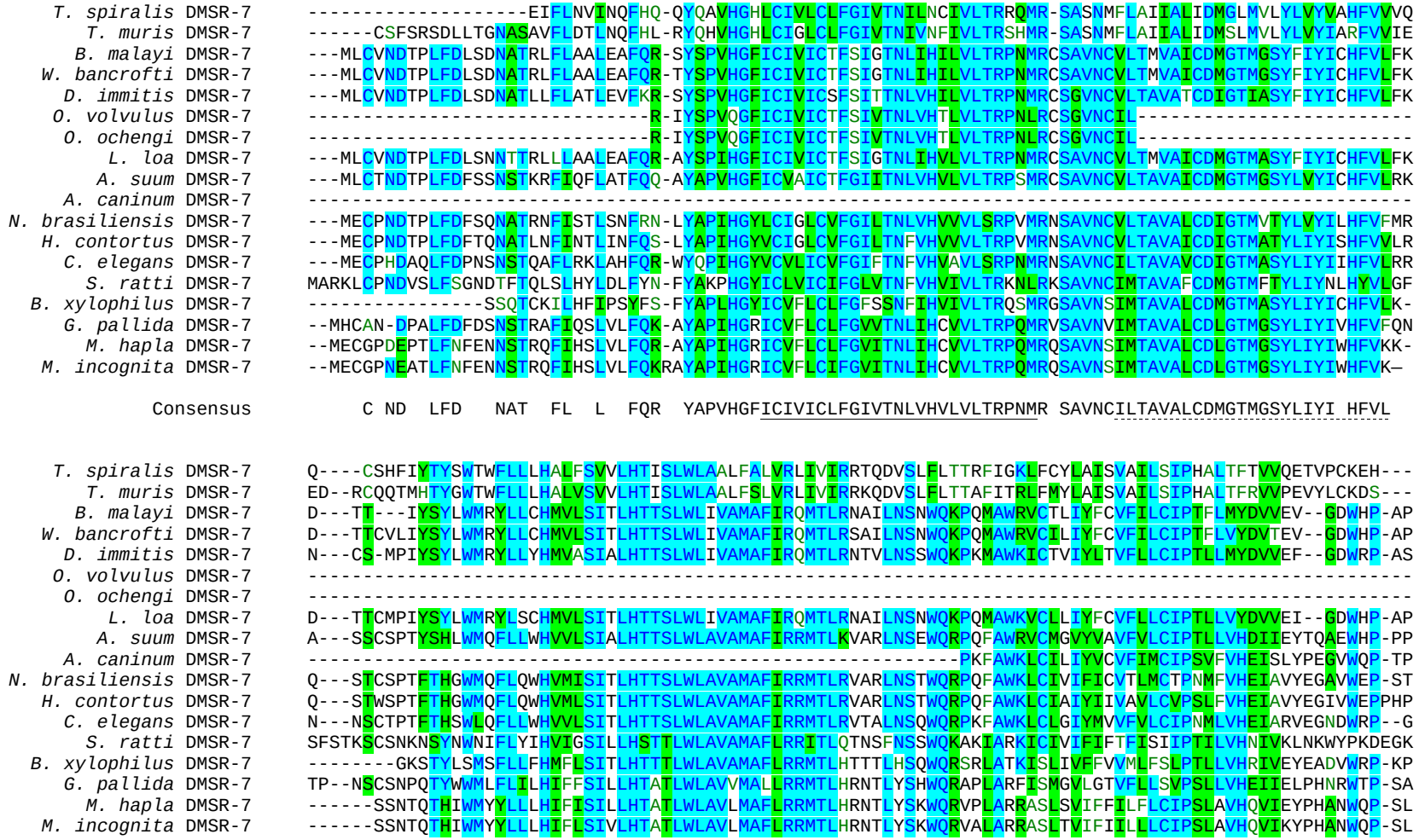
Comment [AM1]:

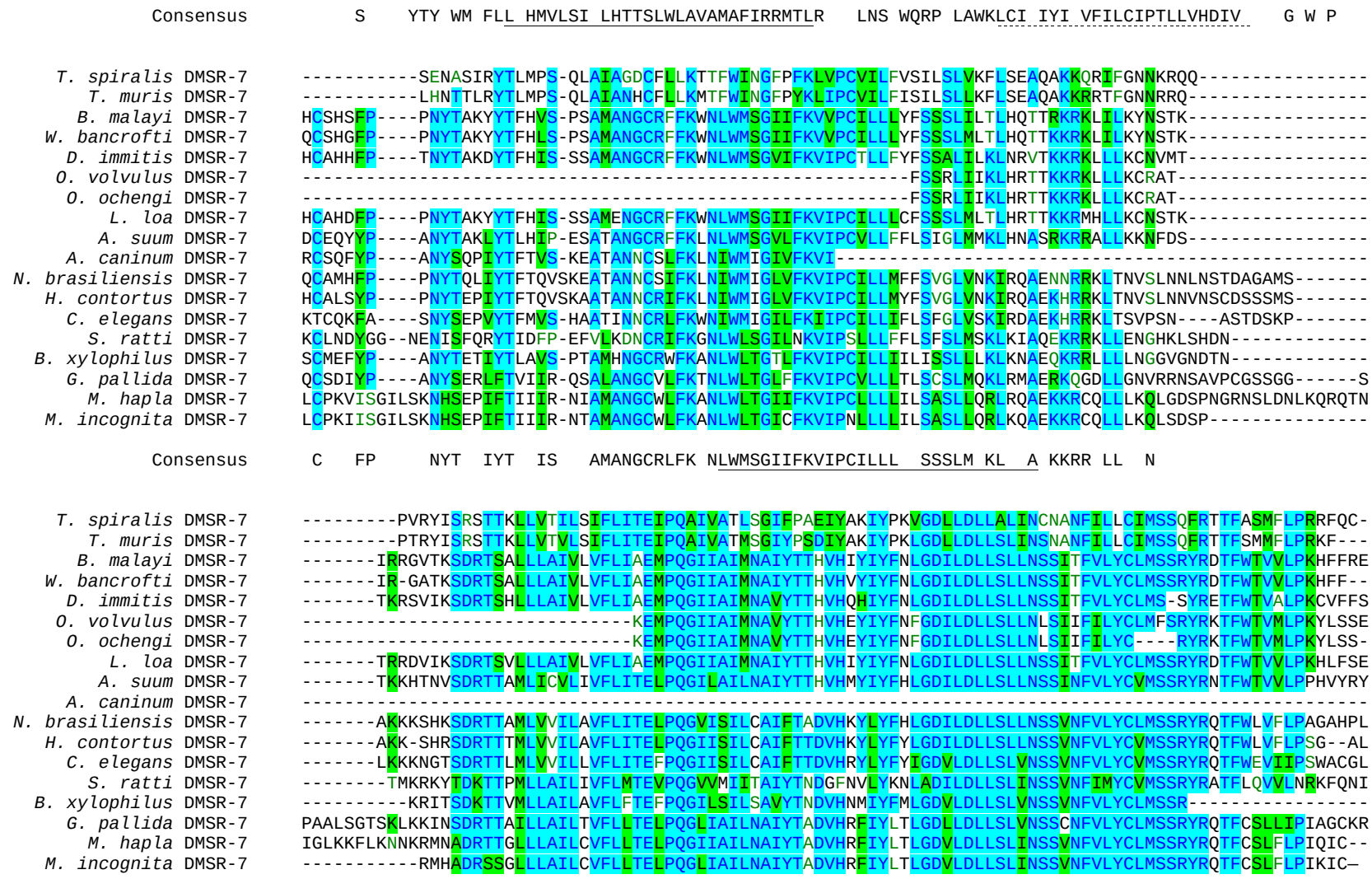
18. DMSR-6 homologues




B. xylophilus DMSR-6 ----------YYNVGFSALFMENGCNLLKLNLWLTGIFLKAVPCFLLMCFTAALLRRLRANDKK----RQLLFHGESRRSNSDRVTYMLLLMVFVFL
Consensus V KYSIG S MFV N C LLKLNLWLTGIMLKAIPCILLL T ALL KLR NKKK RL LLR R KDK DRTTYMLLLMVSVFL
B. malayi DMSR-6 CTELPQGIIAIFNAIYTAQFHFYVYLTIADILDVLSLINCYVGFTVYFCXCSRYRRTFYSIIPYFGFV----------
W. bancrofti DMSR-6 -----------FPAIYTAQFHFYVYLTIADILDVLSLINCHVGFTVYFCTCSRYRRTFYSILPYFGFV----------
O. volvulus DMSR-6 CTELPQGIIAIFNAIYTAQFHLYIYLTIADVLDVLSLINCYVGFTVYFCTCSRYRRTFYSV----------
O. ochengi DMSR-6 CTELPQGIIAIFNAIYTAQFHLYIYLTIADVLDVLSLINCYVGFTVYFCTCSRYRRTFYSV----------
A. suum DMSR-6 STELPQGVMAVLNAIYTKQFHLFVYLPLADVLDLLSLINCYVGFTVFFCTCTRYRQTLLTLFPQQCGCVTRSQTPTHNSMLLQQGVPKRYYTPQIDEHLT
A. caninum DMSR-6 ----------VWFLVYVCTSSRYRQTLLSILPNMP----------
N. brasiliensis DMSR-6 TTELPQGVMAVLNALYTSQFHAYVYLSLADVLDLLSLINCYVAFLVYICTCSRYRQTLLSILPERPLILSAATSHSTMK----------
H. contortus DMSR-6 ITELPQGIMAVLNAIYTSQFHSYVYLSLADVLDLLSLINCYVAFLVYICTCSRYRQTLLSILPNMP----------
C. elegans DMSR-6 FTELPQGIMAILNALFTTQFHQMVYLNLADVLDLLSLINCYVAFLVYSFTSSRYRQTLFSLLPLTKISYSGISTRQGTLKSHQHPGAKTLVQRANSVEVA
S. ratti DMSR-6 ITELPQGICAILNALFTQQFHEIVYSNLADVLDLLSLINCFVAFIVYTSTCSRYRRLLLDVLKPL----------
B. xylophilus DMSR-6 VTELPQGLFAILNAMFTYQFHRYVYVCFADLLDILSLINCYVCFSVYTATSSTYRQTLLMLVP----------
Consensus TELPQGIMAILNAIYTAQFH YVYLTLADVLDLLSLINCYVGFTVY CTCSRYRQTLLSILP
B. malayi DMSR-6 ----------
W. bancrofti DMSR-6 ----------
O. volvulus DMSR-6 ----------
O. ochengi DMSR-6 ----------
A. suum DMSR-6 SKNIAQVSIMSTMQTTVTNGVTTILATEADAFV
A. caninum DMSR-6 ----------
N. brasiliensis DMSR-6 ----------
H. contortus DMSR-6 ----------
C. elegans DMSR-6 SARSPLVDKAAITRPNSAQPTDF----------
S. ratti DMSR-6 ----------
B. xylophilus DMSR-6 ----------
Consensus

19. DMSR-7 homologues




Consensus S YTY WM FLL HMVLSI LHTTSLWLAVAMAFIRRMTLR LNS WQRP LAWKLCI IYI VFILCIPTLLVHDIV G W P
T. spiralis DMSR-7 ----------SENASIRYTLMPS-QLAIAGDCFLLKTTFWINGFPFKLVPCVILFVSILSLVKFLSEAQAKKQRIFGNNKRQQ----------
T. muris DMSR-7 ----------LHNTTLRYTLMPS-QLAIANHCFLLKMTFWINGFPYKLIPCVILFISILSLLKFLSEAQAKKRRTFGNNRRQ----------
B. malayi DMSR-7 HCSHSFP----PNYTAKYYTFHVS-PSAMANGCRFFKWNLWMSGIIFKVVPCILLLYFSSSLILTLHQTTRKRKLILKYNSTK----------
W. bancrofti DMSR-7 QCSHGFP----PNYTAKYYTFHLS-PSAMANGCRFFKWNLWMSGIIFKVVPCILLLYFSSSLMLTLHQTTKKRKLILKYNSTK----------
D. immitis DMSR-7 HCAHHFP----TNYTAKDYTFHIS-SSAMANGCRFFKWNLWMSGVIFKVIPCTLLFYFSSALILKLNRVTKKRKLLLKCNVMT----------
O. volvulus DMSR-7 ----------FSSRLIIKLHRTTKKRKLLLKCRAT----------
O. ochengi DMSR-7 ----------FSSRLIIKLHRTTKKRKLLLKCRAT----------
L. loa DMSR-7 HCAHDFP----PNYTAKYYTFHIS-SSAMENGCRFFKWNLWMSGIIFKVIPCILLLCFSSSLMLTLHRTTKKRMHLLKCNSTK----------
A. suum DMSR-7 DCEQYYP----ANYTAKLYTLHIP-ESATANGCRFFKLNLWMSGVLFKVIPCVLLFFLSIGLMMKLHNASRKRRALLKKNFDS----------
A. caninum DMSR-7 RCSQFYP----ANYSQPIYTFTVS-KEATANNCSLFKLNIWMIGIVFKVI----------
N. brasiliensis DMSR-7 QCAMHFP----PNYTQLIYTFTQVSKEATANNCSIFKLNIWMIGLVFKVIPCILLMFFSVGLVNKIRQAENNRRKLTNVSLNNLNSTDAGAMS-------
H. contortus DMSR-7 HCALSYP----PNYTEPIYTFTQVSKAATANNCRIFKLNIWMIGLVFKVIPCILLMYFSVGLVNKIRQAEKHRRKLTNVSLNNVNSCDSSSMS-------
C. elegans DMSR-7 KTCQKFA----SNYSEPVYTFMVS-HAATINNCRLFKWNIWMIGILFKIIPCILLIFLSFGLVSKIRDAEKHRRKLTSVPSN----ASTDSKP-------
S. ratti DMSR-7 KCLNDYGG--NENISFQRYTIDFP-EFVLKDNCRIFKGNLWLSGILNKVIPSLLLFFLSFSLMSKLKIAQEKRRKLLENGHKLSHDN----------
B. xylophilus DMSR-7 SCMEFYP----ANYTETIYTLAVS-PTAMHNGCRWFKANLWLTGTLFKVIPCILLIILISSLLLKLKNAEQKRRLLLLNGGVGNDTN----------
G. pallida DMSR-7 QCSDIYP----ANYSERLFTVIIR-QSALANGCVLFKTNLWLTGLFFKVIPCVLLLTLSCSLMQKLRMAERKQGDLLGNVRRNSAVPCGSSGG------S
M. hapla DMSR-7 LCPKVISGILSKNHSEPIFTIIIR-NIAMANGCWLFKANLWLTGIIFKVIPCLLLLILSASLLQRLRQAEKKRCQLLLKQLGDSPNGRNSLDNLKQRQTN
M. incognita DMSR-7 LCPKIISGILSKNHSEPIFTIIIR-NTAMANGCWLFKANLWLTGICFKVIPNLLLLILSASLLQRLKQAEKKRCQLLLKQLSDSP----------
Consensus C FP NYT IYT IS AMANGCRLFK NLWMSGIIFKVIPCILLL SSSLM KL A KKRR LL N
T. spiralis DMSR-7 ---------PVRYISRSTTKLLVTILSIFLITEIPQAIVATLSGIFPAEIYAKIYPKVGDLLDLLALINCNANFILLCIMSSQFRTTFASMFLPRRFQC-
T. muris DMSR-7 ---------PTRYISRSTTKLLVTVLSIFLITEIPQAIVATMSGIYPSDIYAKIYPKLGDLLDLLSLINSNANFILLCIMSSQFRTTFSMMFLPRKF---
B. malayi DMSR-7 -------IRRGVTKSDRTSALLLAIVLVFLIAEMPQGIIAIMNAIYTTHVHIYIYFNLGDILDLLSLLNSSITFVLYCLMSSRYRDTFWTVVLPKHFFRE
W. bancrofti DMSR-7 -------IR-GATKSDRTSALLLAIVLVFLIAEMPQGIIAIMNAIYTTHVHVYIYFNLGDILDLLSLLNSSITFVLYCLMSSRYRDTFWTVVLPKHFF--
D. immitis DMSR-7 -------TKRSVIKSDRTSHLLLAIVLVFLIAEMPQGIIAIMNAVYTTHVHQHIYFNLGDILDLLSLLNSSITFVLYCLMS-SYRETFWTVALPKCVFFS
O. volvulus DMSR-7 --------------------------------KEMPQGIIAIMNAVYTTHVHEYIYFNFGDILDLLSLLNLSIIFILYCLMFSRYRKTFWTVMLPKYLSSE
O. ochengi DMSR-7 --------------------------------KEMPQGIIAIMNAVYTTHVHEYIYFNFGDILDLLSLLNLSIIFILYC----RYRKTFWTVMLPKYLSS-
L. loa DMSR-7 -------TRRDVIKSDRTSVLLLAIVLVFLIAEMPQGIIAIMNAIYTTHVHIYIYFNLGDILDLLSLLNSSITFVLYCLMSSRYRDTFWTVVLPKHLFSE
A. suum DMSR-7 -------TKKHTNVSDRTTAMLICVLIVFLITELPQGILAILNAIYTTHVHMYIYFHLGDILDLLSLLNSSINFVLYCVMSSRYRNTFWTVVLPHVYRY
A. caninum DMSR-7 ----------
N. brasiliensis DMSR-7 -------AKKKSHKSDRTTAMLVVILAVFLITELPQGVISILCAIFTADVHKYLYFHLGDILDLLSLLNSSVNFVLYCLMSSRYRQTFWLVFLPAGAHPL
H. contortus DMSR-7 -------AKK-SHRSDRTTTMLVVILAVFLITELPQGIISILCAIFTTDVHKYLYFYLGDILDLLSLLNSSVNFVLYCVMSSRYRQTFWLVFLPSG--AL
C. elegans DMSR-7 -------LKKKNGTSDRTTLMLVVILLVFLITEFPQGIISILCAIFTTDVHRYLYFYIGDVLDLLSLVNSSVNFVLYCVMSSRYRQTFWEVIIPSWACGL
S. ratti DMSR-7 --------TMKRKYTDKTTPMLLAILIVFLMTEVPQGVVMIITAIYTNDGFNVLYKNLADILDLLSLINSSVNFIMYCVMSSRYRATFLQVVLNRKFQNI
B. xylophilus DMSR-7 ----------KRITSDKTTVMLLAILAVFLFTEFPQGILSILSAVYTNDVHNMIYFMLGDVLDLLSLVNSSVNFVLYCLMSSR----------
G. pallida DMSR-7 PAALSGTSKLKKINSDRTTAILLAILTVFLLTELPQGLIAILNAIYTADVHRFIYLTLGDLLDLLSLVNSSCNFVLYCLMSSRYRQTFCSLLIPIAGCKR
M. hapla DMSR-7 IGLKKFLKNNKRMNADRTTGLLLAILCVFLLTELPQGIIAILNAIYTADVHRFIYLTLGDVLDLLSLINSSVNFVLYCLMSSRYRQTFCSLFLPIQIC--
M. incognita DMSR-7 ----------RMHADRSSGLLLAILCVFLLTELPQGLIAILNAIYTADVHRFIYLTLGDVLDLLSLINSSVNFVLYCLMSSRYRQTFCSLFLPIKIC—

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            Consensus             K     SDRTT LLLAIL VFLITELPQGIIAILNAIYTTDVH YIYF LGDILDLLSLLNSSINFVLYCLMSSRYR TFWTVVLPK


     T. spiralis DMSR-7     ----------------------------------------------------------------------------------------------------
        T. muris DMSR-7     ----------------------------------------------------------------------------------------------------
       B. malayi DMSR-7     FTRKKTSEMLSS-----------------EMHSTQKQINK-----------------------------------------------------------
    W. bancrofti DMSR-7     Q--KKTSEMLSS-----------------EMHFTQKQIKQTIPCNNNCETRILK-------------------------------------------
      D. immitis DMSR-7     R--KKTSEILLS-----------------EMHSMQKGMKYTVASSSNYSG-----------------------------------------------
      O. volvulus DMSR-7    V--KHTVASSSN-----------------YNRTILK--------------------------------------------------------------
       O. ochengi DMSR-7    ----------------------------------------------------------------------------------------------------
           L. loa DMSR-7     FIRRKTSRMLPS-----------------EMRFMQKQVKRTVSSSSNYEAKILK-------------------------------------------
         A. suum DMSR-7     FCIKTTSLEMISSMPAGTLKPQNRATKILINNNTTRKNSRKSGCNHDNYRAITEESDDYSMPLFPEAHSDHL---------------------------
      A. caninum DMSR-7      ----------------------------------------------------------------------------------------------------
  N. brasiliensis DMSR-7     CVNKQTTTVSNFNFTTIPIQRKNSNKVRSKEYAPLATEAEEQRDD-----------------------------------------------------
     H. contortus DMSR-7     CINKQTATASNLNFTQIQLQRKNSNKVRNKEYAPLATEAEEHRDE-----------------------------------------------------
       C. elegans DMSR-7     WTTRRGSPTELSQLQLNNSLRLG----RKQSYTPLATEPEPARNEYWRYEASVSDNQNSSREHQL---------------------------------
         S. ratti DMSR-7     IINKNGITTLFFTKEFIPSTSNGNQLLKMKSTSLQNNINEELNFLNKKKDIINNKNDKQSVSIKKIGTSQYRGMKKLKNSIGEKNCFVYEDKNQDITNVC
    B. xylophilus DMSR-7     ----------------------------------------------------------------------------------------------------
       G. pallida DMSR-7     CVATAHQSLPMVPSFASQADRDNNRIARTVDTGRRR---------------------------------------------------------------
         M. hapla DMSR-7     ----------------------------------------------------------------------------------------------------
     M. incognita DMSR-7     ----------------------------------------------------------------------------------------------------

            Consensus      K


     T. spiralis DMSR-7     ------------------------
        T. muris DMSR-7     ------------------------
       B. malayi DMSR-7     ------------------------
    W. bancrofti DMSR-7     ------------------------
      D. immitis DMSR-7     ------------------------
      O. volvulus DMSR-7    ------------------------
       O. ochengi DMSR-7    ------------------------
           L. loa DMSR-7     ------------------------
         A. suum DMSR-7     ------------------------
      A. caninum DMSR-7     ------------------------
  N. brasiliensis DMSR-7     ------------------------
     H. contortus DMSR-7     ------------------------
       C. elegans DMSR-7     ------------------------
         S. ratti DMSR-7     DTNSIFEDNKEEYSIAKIEGDIQI
    B. xylophilus DMSR-7     ------------------------
       G. pallida DMSR-7     ------------------------
         M. hapla DMSR-7     ------------------------
     M. incognita DMSR-7     ------------------------
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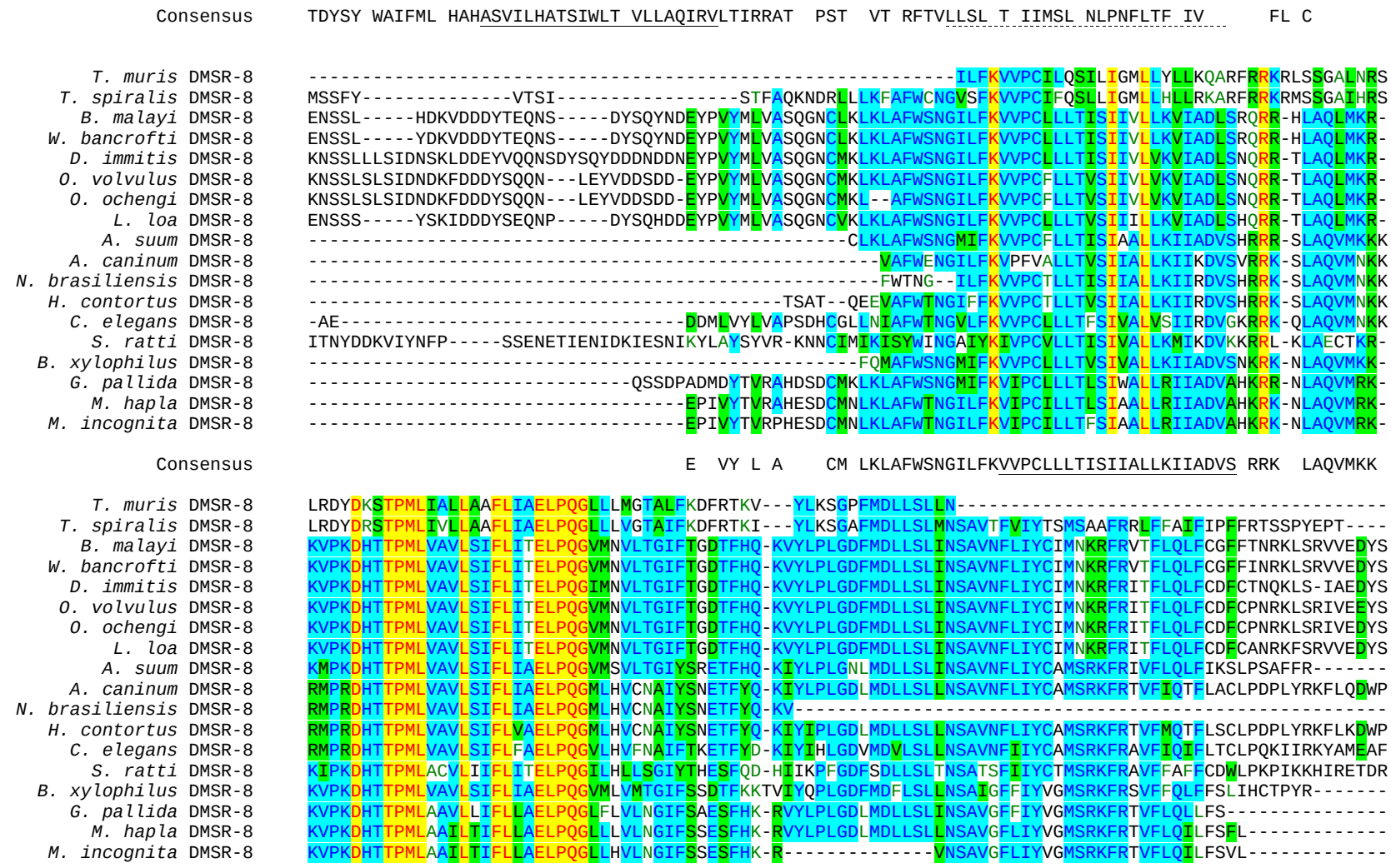
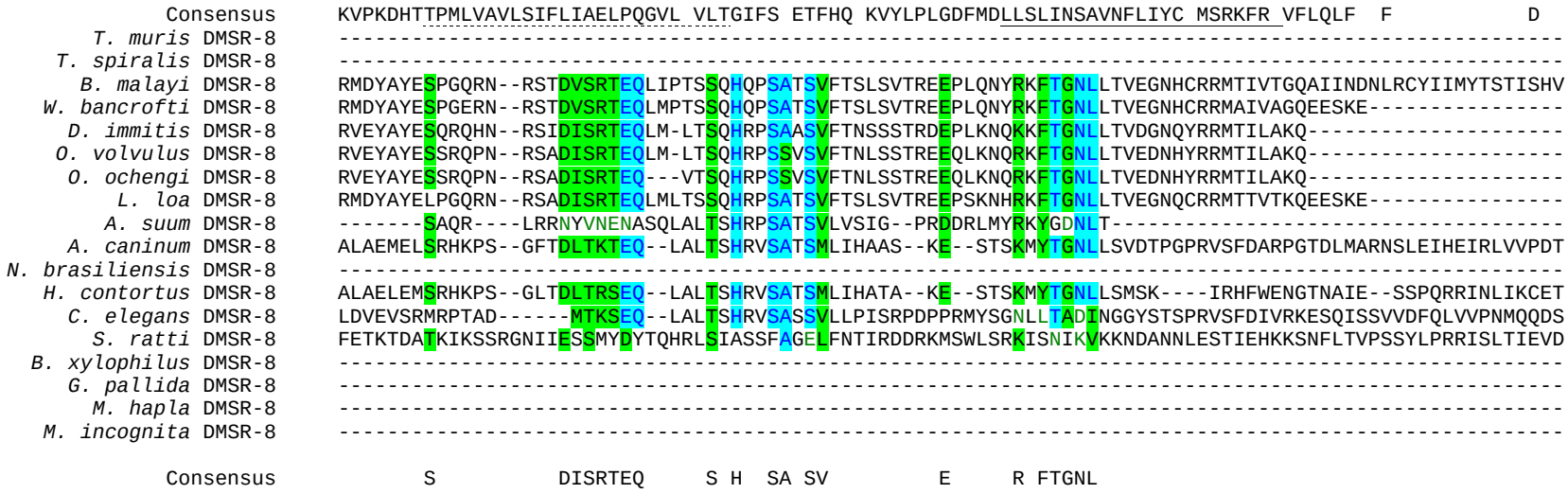
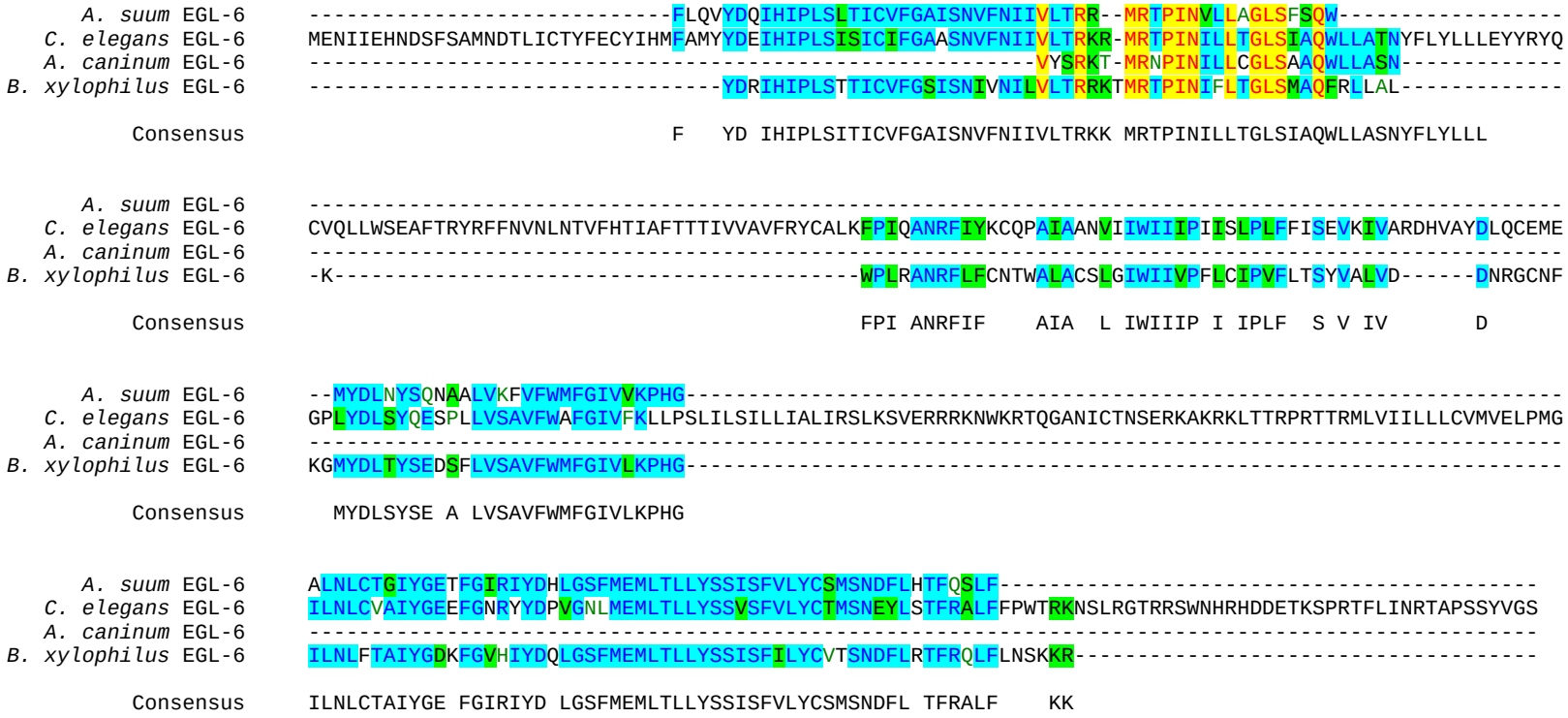
20. DMSR-8 homologues

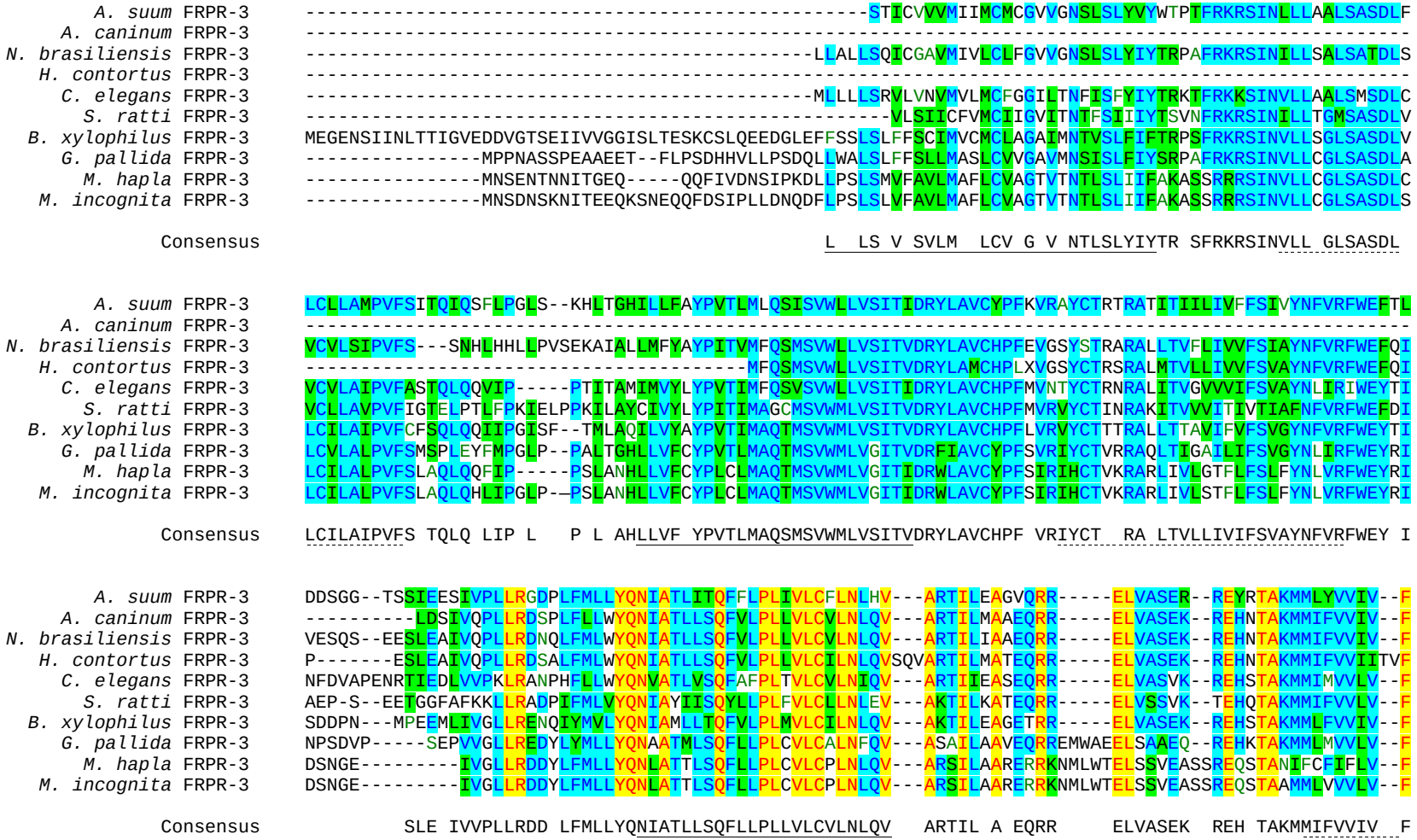

Consensus TDYSY WAIFML HAHASVILHATSIWLT VLLAQIRVLTIRRAT PST VT RFTVLLSL T IIMSL NLPNFLTF IV FL C
T. muris DMSR-8
T. spiralis DMSR-8
B. malayi DMSR-8
W. bancrofti DMSR-8
D. immitis DMSR-8
O. volvulus DMSR-8
O. ochengi DMSR-8
L. loa DMSR-8
A. suum DMSR-8
A. caninum DMSR-8
N. brasiliensis DMSR-8
H. contortus DMSR-8
C. elegans DMSR-8
S. ratti DMSR-8
B. xylophilus DMSR-8
G. pallida DMSR-8
M. hapla DMSR-8
M. incognita DMSR-8
Consensus E VY L A CM LKLAFWSNGILFKVVPCLLLTISIIALLKIIADVS RRK LAQVMKK
T. muris DMSR-8
T. spiralis DMSR-8
B. malayi DMSR-8
W. bancrofti DMSR-8
D. immitis DMSR-8
O. volvulus DMSR-8
O. ochengi DMSR-8
L. loa DMSR-8
A. suum DMSR-8
A. caninum DMSR-8
N. brasiliensis DMSR-8
H. contortus DMSR-8
C. elegans DMSR-8
S. ratti DMSR-8
B. xylophilus DMSR-8
G. pallida DMSR-8
M. hapla DMSR-8
M. incognita DMSR-8

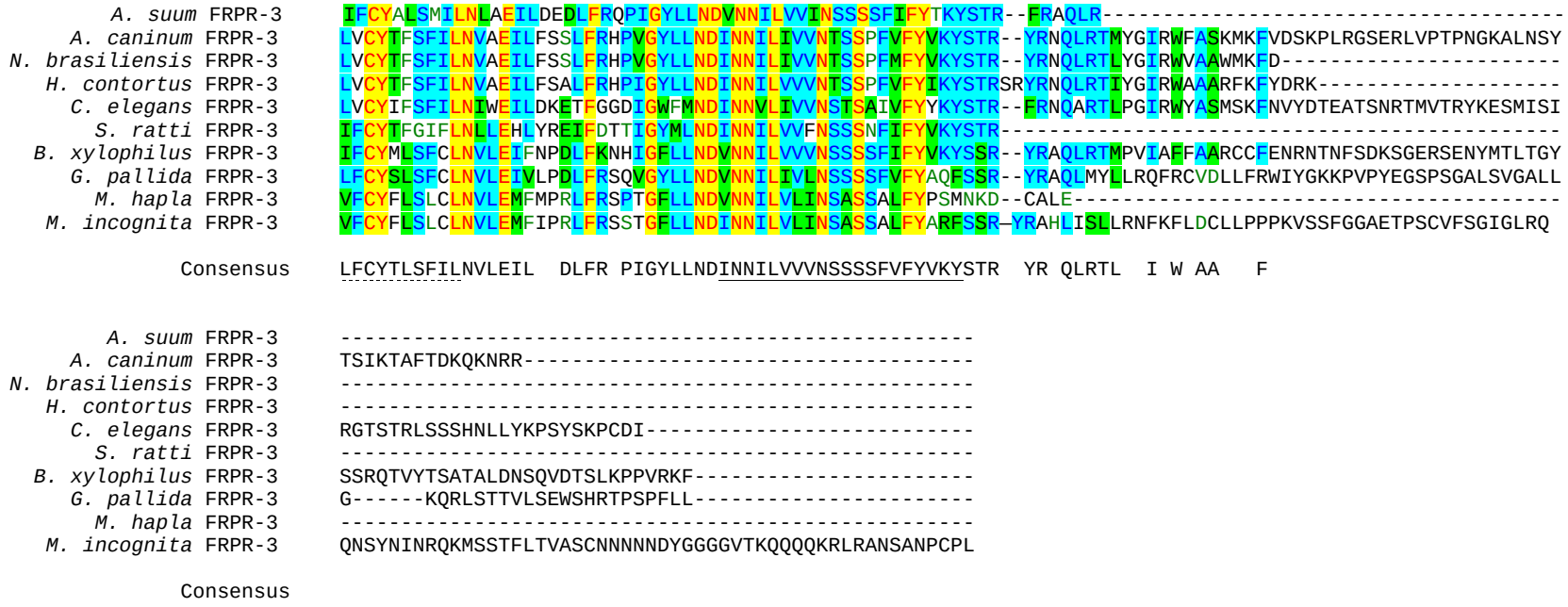

Consensus KVPKDHTTPMLVAVLSIFLIAELPQGVL VLTGIFS ETFHQ KVYLPLGDFMDLLSLINSAVNFLIYC MSRKFR VFLQLF F D
T. muris DMSR-8
T. spiralis DMSR-8
B. malayi DMSR-8 RMDYAYESPGQRN--RSTDVSRTEQLIPTSSQHQPSATSVFTSLSVTREEPLQNYRKFTGNLLTVEGNHCRRMTIVTGQAIINDNLRCYIIMYTSTISHV
W. bancrofti DMSR-8 RMDYAYESPGERN--RSTDVSRTEQLMPTSSQHQPSATSVFTSLSVTREEPLQNYRKFTGNLLTVEGNHCRRMAIVAGQEESKE----------
D. immitis DMSR-8 RVEYAYESQRQHN--RSIDISRTEQLM-LTSQHRPSAASVFTNSSSTRDEPLKNQKKFTGNLLTVDGNQYRRMTILAKQ----------
O. volvulus DMSR-8 RVEYAYESSRQPN--RSADISRTEQLM-LTSQHRPSSVSVFTNLSSTREEQLKNQRKFTGNLLTVEDNHYRRMTILAKQ----------
O. ochengi DMSR-8 RVEYAYESSRQPN--RSADISRTEQ---VTSQHRPSSVSVFTNLSSTREEQLKNQRKFTGNLLTVEDNHYRRMTILAKQ----------
L. loa DMSR-8 RMDYAYELPGQRN--RSADISRTEQLMLTSSQHRPSATSVFTSLSVTREEPSKNHRKFTGNLLTVEGNQCRRMTTVTKQEESKE----------
A. suum DMSR-8 -------SAQR----LRRNYVNENASQLALTSHRPSATSVLVSIG--PRDDRLMYRKYGDNLT----------
A. caninum DMSR-8 ALAEMELSRHKPS--GFTDLTKTEQ--LALTSHRVSATSMLIHAAS--KE--STSKMYTGNLLSVDTPGPRVSFDARPGTDLMARNSLEIHEIRLVVPDT
N. brasiliensis DMSR-8
H. contortus DMSR-8 ALAELEMSRHKPS--GLTDLTRSEQ--LALTSHRVSATSMLIHATA--KE--STSKMYTGNLLSMSK----IRHFWENGTNAIE--SSPQRRINLIKCET
C. elegans DMSR-8 LDVEVSRMRPTAD------MTKSEQ--LALTSHRVSASSVLLPISRPDPPRMYSGNLLTADINGGYSTSPRVSFDIVRKESQISSVVDFQLVVPNMQQDS
S. ratti DMSR-8 FETKTDATKIKSSRGNIIESSMYDYTQHRLSIASSFAGELFNTIRDDRKMSWLSRKISNIKVKKNDANNLESTIEHKKSNFLTVPSSYLPRRISLTIEVD
B. xylophilus DMSR-8
G. pallida DMSR-8
M. hapla DMSR-8
M. incognita DMSR-8
Consensus S DISRTEQ S H SA SV E R FTGNL

21. EGL-6 homologues

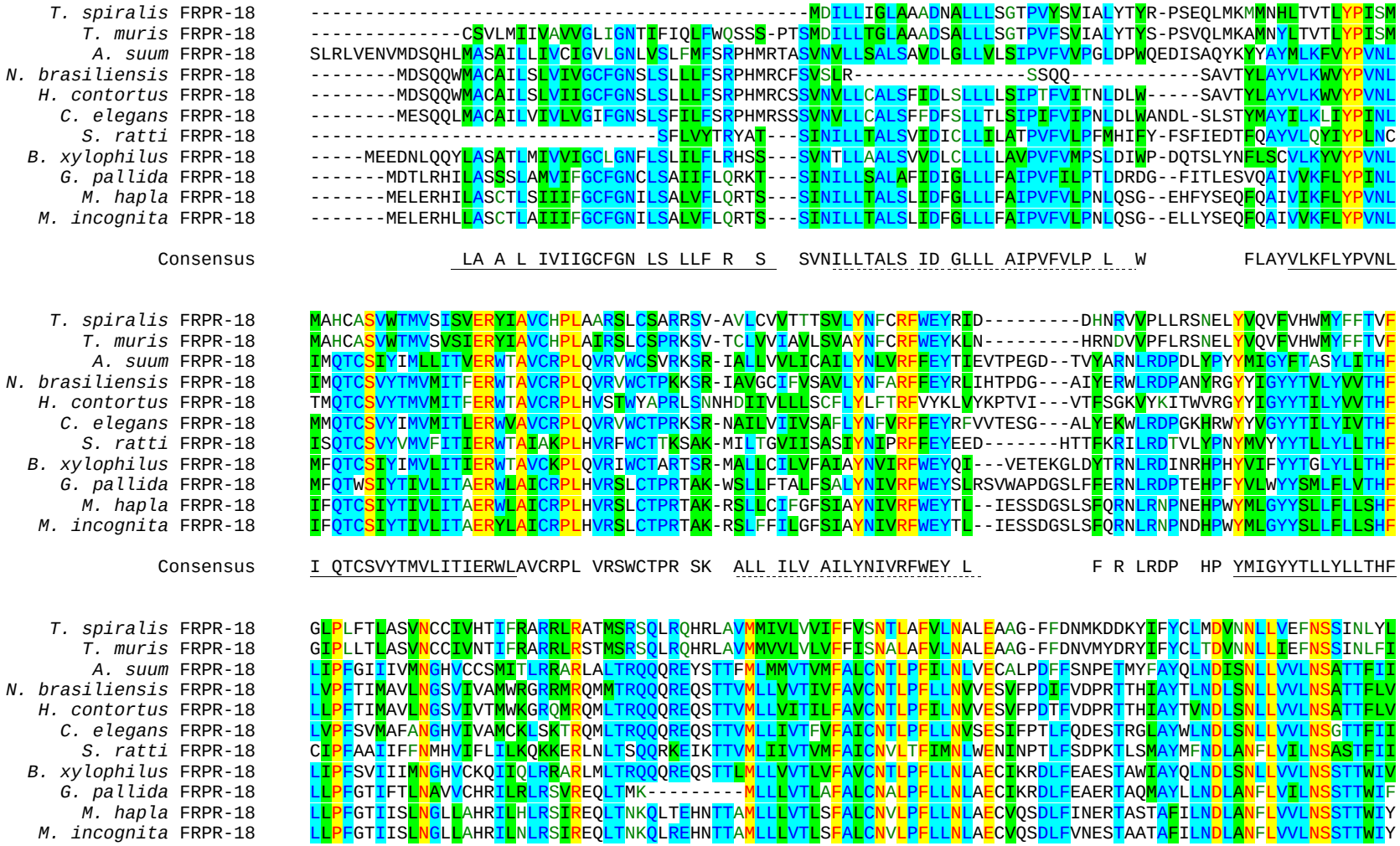


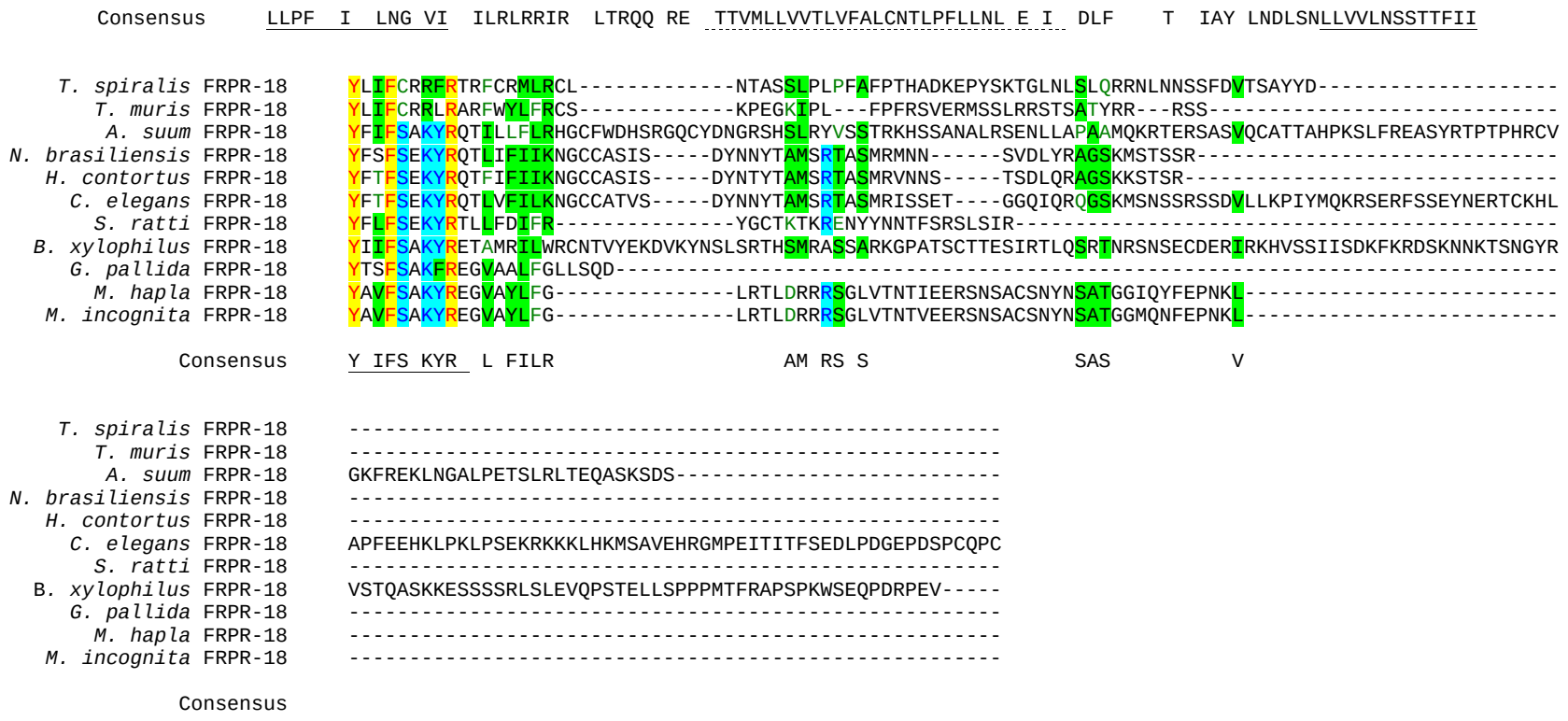
22. FRPR-3 homologues




A. suum FRPR-3 IFCYALSMILNLAEILDEDLFRQPIGYLLNDVNNILVVINSSSSFIFYTKYSTR--FRAQLR----------
A. caninum FRPR-3 LVCYTFSFILNVAEILFSSLFRHPVGYLLNDINNILIVVNTSSPFVFYVKYSTR--YRNQLRTMYGIRWFASKMKFVDSKPLRGSERLVPTPNGKALNSY
N. brasiliensis FRPR-3 LVCYTFSFILNVAEILFSSLFRHPVGYLLNDINNILIVVNTSSPFMFYVKYSTR--YRNQLRTLYGIRWVAAWMKFD----------
H. contortus FRPR-3 LVCYTFSFILNVAEILFSALFRHPIGYLLNDINNILVVVNTSSPFVFYIKYSTRSRYRNQLRTIYGIRWAAARFKFYDRK----------
C. elegans FRPR-3 LVCYIFSFILNIWEILDKETFGGDIGWFMNDINNVLIVVNSTSAIVFYYKYSTR--FRNQARTLPGIRWYASMSKFNVYDTEATSNRTMVTRYKESMISI
S. ratti FRPR-3 IFCYTFGIFLNLLEHLYREIFDTTIGYMLNDINNILVVFNSSSNFIFYVKYSTR----------
B. xylophilus FRPR-3 IFCYMLSFCLNVLEIFNPDLFKNHIGFLLNDVNNILVVVNSSSSFIFYVKYSSR--YRAQLRTMPVIAFFAARCCFENRNTNFSDKSGERSENYMTLTGY
G. pallida FRPR-3 LFCYSLSFCLNVLEIVLPDLFRSQVGYLLNDVNNILIVLNSSSSFVFYAQFSSR--YRAQLMYLLRQFRCVDLLFRWIYGKKPVPYEGSPSGALSVGALL
M. hapla FRPR-3 VFCYFLSLCLNVLEMFMPRLFRSPTGFLLNDVNNILVLINSASSALFYPSMNKD--CALE----------
M. incognita FRPR-3 VFCYFLSLCLNVLEMFIPRLFRSSTGFLLNDINNILVLINSASSALFYARFSSR-YRAHLISLLRNFKFLDCLLPPPKVSSFGGAETPSCVFSGIGLRQ
Consensus LFCYTLSFILNVLEIL DLFR PIGYLLNDINNILVVVNSSSSFVFYVKYSTR YR QLRTL I W AA F
A. suum FRPR-3 ----------
A. caninum FRPR-3 TSIKTAFTDKQKNRR----------
N. brasiliensis FRPR-3 ----------
H. contortus FRPR-3 ----------
C. elegans FRPR-3 RGTSTRLSSSHNLLYKPSYSKPCDI----------
S. ratti FRPR-3 ----------
B. xylophilus FRPR-3 SSRQTVYTSATALDNSQVDTSLKPPVRKF----------
G. pallida FRPR-3 G------KQRLSTTVLSEWSHRTPSPFLL----------
M. hapla FRPR-3 ----------
M. incognita FRPR-3 QNSYNINRQKMSSTFLTVASCNNNNNDYGGGGVTKQQQQKRLRANSANPCPL
Consensus

14. FRPR-18 homologues




Consensus LLPF I LNG VI ILRLRRIR LTRQQ RE TTVMLLVVTLVFALCNTLPFLLNL E I DLF T IAY LNDLSNLLVVLNSSTTFII
T. spiralis FRPR-18 YLIFCRRFRTRFCRMLRCL----------NTASSLPLPFAFPTHADKEPYSKTGLNLSLQRRNLNNSSFDVTSAYYD----------
T. muris FRPR-18 YLIFCRRLRARFWYLFRCS----------KPEGKIPL---FPFRSVERMSSLRRSTSATYRR---RSS----------
A. suum FRPR-18 YFIFSAKYRQTILLFLRHGCFWDHSRGQCYDNGRSHSLRYVSSTRKHSSANALRSENLLAPAAMQKRTERSASVQCATTAHPKSLFREASYRTPTPHRCV
N. brasiliensis FRPR-18 YFSFSEKYRQTLIFIIKNGCCASIS-----DYNNYTAMSRTASMRMNN------SVDLYRAGSKMSTSSR----------
H. contortus FRPR-18 YFTFSEKYRQTFIFIIKNGCCASIS-----DYNTYTAMSRTASMRVNNS-----TSDLQRAGSKKSTSR----------
C. elegans FRPR-18 YFTFSEKYRQTLVFILKNGCCATVS-----DYNNYTAMSRTASMRISSET----GGQIQRQGSKMSNSSRSSDVLLKPIYMQKRSERFSSEYNERTCKHL
S. ratti FRPR-18 YFLFSEKYRTLLFDIFR----------YGCTKTKRENYYNNTFSRSLSIR----------
B. xylophilus FRPR-18 YIIFSAKYRETAMRILWRCNTVYEKDVKYNSLSRTHSMRASSARKGPATSCTTESIRTLQSRTNRSNSECDERIRKHVSSIISDKFKRDSKNNKTSNGYR
G. pallida FRPR-18 YTSFSAKFREGVAALFGLLSQD----------
M. hapla FRPR-18 YAVFSAKYREGVAYLFG----------LRTLDRRRSGLVTNTIEERSNSACSNYNSATGGIQYFEPNKL----------
M. incognita FRPR-18 YAVFSAKYREGVAYLFG----------LRTLDRRRSGLVTNTVEERSNSACSNYNSATGGMQNFEPNKL----------
Consensus Y IFS KYR L FILR AM RS S SAS V
T. spiralis FRPR-18 ----------
T. muris FRPR-18 ----------
A. suum FRPR-18 GKFREKLNGALPETSLRLTEQASKSDS----------
N. brasiliensis FRPR-18 ----------
H. contortus FRPR-18 ----------
C. elegans FRPR-18 APFEEHKLPKLPSEKRKKKLHKMSAVEHRGMPEITITFSEDLPDGEPDSPCQPC
S. ratti FRPR-18 ----------
B. xylophilus FRPR-18 VSTQASKKESSSSRLSLEVQPSTELLSPPPMTFRAPSPKWSEQPDRPEV-----
G. pallida FRPR-18 ----------
M. hapla FRPR-18 ----------
M. incognita FRPR-18 ----------
Consensus