

1 MDKVLNREESMELMDLLGLERAAWGNLPLMRKAYLRKCKEFHFPDKGGDEDKMKRMNTLYKKMEQDVKVAHQPDFGTWSSSEVPTYGTEEWESWWSSFNEKWDEDLFCHEDMFASDEEATADSQHSTPPK 129

124 HSTPPKPKKRKVEDPKDFPSDLHQFLSQAVFSNRTLACFAVYTTKEKAQILYKKLMEKYSVTFISRHMCAGHNIIFFLTTPHRRVSAINNFCQKLCTFSFLICKGVNKEYLLYSALTRDPYHTIEESIQ 251

PLMRKAYLK
 SLMRKAYLR
 ↓LSLMRKAYL
 NLSLMRKAY
 AYLRRCKEF
 ↑AYLKKCKEF
 KAYLRRCKE
 KAYLKKCKE
 ↑RAAWGNLSL
 LGRAAWGNL LMRKAYLR
 PERAAWGNL LMRKAYLK
 DLQHSTPPK
 ELQHSTPPK
 RKDEDPKDF
 KKKRKDEDP
 KEKRKVEDP
 PKKKRKDED
 PKKRKVED
 PPKEKRKDE
 PPKKRKVE
 ↓TPPKKKRKD
 ↓↑TPPKKRKV
 STPPKEKRK
 HSTPPKEKR
 ↑FPSDLHHFL
 ↑FPSDVHQFL
 ↓FPCDLHQFL
 DFPSDLHHF
 DFPSDVHQF
 ↓DFPCDLHQF
 ↓DPKDFPSDV
 ↓DPKDFPCDL
 REVEDPKDF
 KKKREVEDP
 PKKKREVED
 PPKKREVE
 ↑TPPKKKREV
 STPPKKRE
 ↑HAFVSNRTL
 LSHAFVSNR
 ↑HQFLSHAVF
 ↑HHFLSQAVF
 KAQIVYKKL
 KAQMLYKKL
 KALILYKKL
 KALILYKKV
 KVLILYKKL
 KEKAQIVYK
 KEKAQMLYK
 KEKALILYK
 KEKVLILYK
 TKEKAQVLY
 TKEKAQMLY
 TKEKALILY
 TKEKVLILY
 NKEKAQILY
 ↑TNKEKAQIL
 ↑TTKEKVLIL
 ↓TTKEKAQIV
 ↓TTKEKAQML
 ↓TTKEKALIL
 MEKYSVTLI
 MEKYPVTFI
 ↑LMEKYSVTL
 ↑LMEKYPVTF
 ↑VMEKYSVTF
 KLMEKYPVT
 KVMKYSVT
 ↑LYKKVMEKY
 ↑VYKKLMEKY
 ILYKKVMEK
 IVYKKLMEK
 MLYKKLMEK
 LYSFLTPHR
 AGHNLYSFL
 CAGHNLYSF
 MCAGHNLYS
 VCAGHNIIF
 ICAGHNIIF
 RHVCAGHNI
 RHICAGHNI
 RQMCAGHNI
 CEKLCTFSF
 NFCEKLCTF
 PYHTIEESI
 ↑PYTIEESI
 ↑PYTIEESI
 ↓LTRDPYHII
 ↓LTRDPYII
 ↓LTRDPYTI
 LTRDPYHTI
 ↓LTRNPYII
 ↓LTKEPYHTI
 ↓LTKDPYHTI
 YSALTRNPY
 YSALTREPY
 YSALTKEPY
 YSALTKDPY

↓MYLEFQYNA
 LSMYLEFQY
 LLLSMYLEF
 DVFLLLSMY
 DVLLLLGMY
 KCEDVLLLL
 TKCEDVLLL
 252 GGLKEHDFNPEEPEETKQVSWKLITEYAVETKCEDVFLLLGMYLEFQYNVEECKKCQKKDQPYHFKYHEKHFNATIFAESKNQKSICQQAVDVLAKKRVDTLHMTREEMLT~~ERF~~NHILDKMDLI~~F~~ 378
 REEMLT~~NR~~F
 REEMLT~~GS~~F HILD~~R~~MDLI
 REEMLT~~DR~~F↑YILDKMDLI

FLHCVVFNV
 FDFLHCVVF
 ↓VIFDFLHCV
 ↓VRDFLHCI
 MDSVRDFDL ↑VPKRRYWLL
 ↓KMDSVRDFD VVFNVPKRR
 379 GAHGNAVLEQYMAGVAWLHCLLPKMDSVIFDFLHCIVFNVPKRRYWLFKGPIDSGKTTLAAGLLDLCGGKALNVNLPMERLTFELGVAIDQYMVVFEDVKGTGAESKDLPSGHGINNLD~~S~~LRDYL 503
 RGKALNVNL
 LDLCRGKAL
 GLLDLCRGK

KTLHARFVR
 ↑VPKTLHARF
 ↓YPVPKTLHA
 ↓YPGPKTLQA
 ↓YAVPKTLQA
 NEYPGPKTL
 NEYAVPKTL
 NKYPVPKTL
 ↓NDYPVPKTL
 TMNEYPGPK
 TMNEYAVPK ↓IHTYFRPKI
 TMNKYPVPK ↑ARFLIHTYF
 TMNDYPVPK LHARFLIHT
 504 DGSVKVNLEKKHLNKRTQIFPPGLVTMNEYVPVKTLQARFVRQIDFRPKIYLRKSLQNSEFLLLEKRILQSGMTLLLLLIWFRPVADFATDIQSRIVEWKERLDSEISMYTFSRMKYNICMGKCIL 628
 LLLIWSRPV
 LLLLLIWSR
 TLLLLLIWS
 ITLLLLLIW
 ↓GITLLLLLI
 SGITLLLLL
 LQSGITLLL
 ILQSGITLL
 ↓RILQSGITL IWSRPVADF

629 DITREEDSETEDSGHGSSTESQSQCSSQVSDTSAPAEDSQRLDPHSQELHLCKGFQCFKRPKTPPPK*

Frequency of 9mer variants (%)			
<1%	1% - <5%	5% - <10%	10% - < 25.0%

