

Numbering is for the alignment, not for FVIII sequence

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      10      20      30      40      50      60      70      80      90     100
FVIII 20-2351_ -ATRRYYLGAVELSWDYMQSDL-----GELPVDARF--PPRVPKSFPFNTSVVYKKTLEFVEFTDHLFNIAKPRPPWMGLLGPPTIQAEVYD TVVITLKNMA
FV 29-2224_    AQLRQFYVAAQGISWSY-RPEP-----TNSSLNLSV-----TSFKKIVYREY-EPYFKKEKPQSTISGLLGPPTLYAEVGDIIKVFHNKA
CP 20-1065_   -KEKHYIIGIIEETWDY-ASDHGEKKLISVDTEHSNI---YLQNGPDRIGRLYKKALYLQYTDDETFRTTIEKPVWLGFGLPIIKAETGDKVYVHLKNLA
HP 24-1158_   -ATRVYYLGIRDVQWNY-APKG--RNVITNQPLDSDIVASSFLKSDKNRIGGYTKKTIYKEYKDDSYTDEVAQPAWLGFGLGPVLQAEVGDVILIHHLKNFA

      110     120     130     140     150     160     170     180     190     200
FVIII 20-2351_ SHPVSLHAVGVSYWKASEGAEYDDQTSQREKEDDKVFPGGSHITYVWQVLKENGPMSADPLCLTYSYLSHVLDLVKDLNSGLIGALLVCREGSLAK----EK
FV 29-2224_    DKPLSIHPQGIRYSKLESEGASYLDHTFPAEKMDDAVAPGREYTYEWSISEDSGPTHDDPPCLTHIYYSHENLIEDFNSSLIGPLLIICKKGTLTTEGG--TQ
CP 20-1065_   SRPYTFHSHGITYYKEHEGAIYPDNTTDFQRADDKVYPGEQYTYMLLATEEQSPGEGDNCVTRIYHSHIDAPKDIASGLIGPLIICKKDSL DKE---KE
HP 24-1158_   TRPYTIHPHGVFYEKDSEGSLYPDGSSGPLKADDVSPPGGSHIYNWTIPEGHAPTADAPACLTIWIYHSHVDAPRDIATGLIGPLITCKRGALDGNSSPPQR

      210     220     230     240     250     260     270     280     290     300
FVIII 20-2351_ TQTLHKFILLFAVFDEGKSWH-----SETKNSLMQDRDAASARAWPKMHTVNGYVNRSLPGLIGCHRKSVYWHVIGMGTTPEVHSIFLEGHTFLVRNHR
FV 29-2224_    KTFDKQIVLLFAVFDESKSWS-----QSSSLMYTVNGYVNGTMPDITVCAHDHISWHLLGMSSGPELFSIHFNQVLEQNHK
CP 20-1065_   KHIDREFVVMFVVDENFSWYLEDNIKTYCSEPEKVDKDNEDFQESNRMYSVNGYTFGSLPGLSMCAEDRVKWYLFGMGNEVDVHAAFFHFGQALTNKNYR
HP 24-1158_   QDVDHDFLLFSVVDENLSWHLNENIATYCSDPASVDKEDETFQESNRMHAINGFVFGNLPELNMCAQKRVAWHLFGMGNEIDVHTAFFHFGQMLTTRGHH

      310     320     330     340     350     360     370     380     390     400
FVIII 20-2351_ QASLEISPITFLTAQTLIMDLGQFLLFCHISSHQHDGMEAYVKVDSCEEPQLRMKNNEEAEDYDDDLDSEMDVVRFDNNSPSFIQIRSVAKKHPKTW
FV 29-2224_    VSAITLVSATSTTANMTVGPEGKWIISLTPKHLQAGMQAYIDIKNCPKK-----TRNLKKITREQRRHMKRW
CP 20-1065_   IDTINLFPATLFDAYMVAQNPGEWMLSCQNLNHLKAGLQAFFVQECNK-----SSSKDNIRGKHVRH----
HP 24-1158_   TDVANIFPATFVTAEMVPWEPGTWLI SCQVNSHFRDGMQALYKVKSCSM-----APPVDLLTGK-VRQ----

      410     420     430     440     450     460     470     480     490     500
FVIII 20-2351_ VHYIAAEEEDWDYAPLVLA-----PDRSYKSQYLNNGPQRIGRKYKVRFMAYTDETFKTREA---IQHESGILGPLLYGEVGD TLLIIFKNQASRP
FV 29-2224_    EYFIAAEEVIWDYAPVIPA-----NMDKKYRSQHLDNFSNQIGKHYKVMYTYQYEDESFTKHTVNP-NMKEDGILGPIIRAQVRD TLKIVFKNMASRP
CP 20-1065_   -YYIAAEEIIWNYAPSGIDIFTKENLTAPGSDSAVFFEQGTTTRIGGSYKLVYREYTDASFTNRKERGPEEEHLGILGPVIWA EVGDTIRVTFHNKGAYP
HP 24-1158_   -YFIEAHEIQWDYGPMDHGDSTGKNLREPGSISDKFFQKSSSRIGGYTKVRYEAFQDETFQEKMHLE-EDRHLGILGPVIRA EVGDTIQVVFYNRASQP

      510     520     530     540     550     560     570     580     590     600
FVIII 20-2351_ YNIYPHGIT-----DVRPLYSRRLPKGVKHLKDFPILPGEIFKYKWTVTVEDGPTKSDPRCLTRYYSFVNMERDLASGLIGPLLI CYKESVDQRNQI
FV 29-2224_    YSIYPHGVTFSPEYEDEVNSSFTSGRNNTMIR----AVQPGETYTYKWNILEFDEPTENDAQCLTRPYSDVDIMRDIASGLIGLLI CKRSRLDRRGIQR
CP 20-1065_   LSIEPIGVRFNKNNEGTYYSNPNPQRSRVPPSASHVAPTEFTTYEWTVPKEVGPTNADPVCLAKMYSAVDPTKDI FTGLIGPMKICKKGS LHANRQK
HP 24-1158_   FSMQPHGVFYEKDYEGTVYN-----DGSSYPGL-VAKPFEKVTYRWTVPPHAGPTAQDPACLTWMYFSAADPIRDTNSGLVGPLLIVCRAGALGADGKQK
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610 620 630 640 650 660 670 680 690 700
FVIII 20-2351_ MSDKRNVLFSVFDENRSWYLTENIQRFLPNPAGVQLEDPEFQASNIMHSINGYVFDL-QLSVCLHEVAYWYILSIGAQTDFLSVFFSGYTFKHKMYE
FV 29-2224_ AADIEQQAVFAVFDENKSWYLEDNINKFCENPDEVKRDDPKFYESNIMSTINGYVPEISITTLGFCFDDTVQWHFCSVGTQNEILTIHFTGHLSFIYKGRHE
CP 20-1065_ DVDKEFYLFPTVFDENESLILEDNIRMFTTAPDQVDEDEDQESNKMHSMNGFMYGNQPGGLTMCKGDSVWYLFSGAGNEADVHGIYFSGNTYLRGERR
HP 24-1158_ GVDKEFFLLFTVLDENKSWYSNANQAAAMLDFRLLSEDIEGFQDSNRMHAINGFLLSNLPRLDCKGDTVAVHLLGLGTETDVHGVMFQGNTVQLQGMRK

710 720 730 740 750 760 770 780 790 800
FVIII 20-2351_ DTLTLFPFSGETVFMSENPGWLWILGCHNSDFRNRGMTALLKVSSCD-KNTGD-----
FV 29-2224_ DTLTLFPMRGEVTVTMDNVGTWMLTSMNSSPRSKKLRKFRDVKCI-PDDDEDSYEIFEPEPESTVMATRKMHDRLEPEDEESDADYDYQNRLAAALGIR
CP 20-1065_ DTANLFPQTSLSLTHMWPDTTEGTFNVECLTTDHYTGGMKQKYTVNQCR-RQSED-----
HP 24-1158_ GAAMLFPHTFVMAIMQPDNLGTFEIIYCQAGSHREAGMRAIYNVSQCPCGHQATP-----

810 820 830 840 850 860 870 880 890 900
FVIII 20-2351_ -----YYEDSYEDISAYLLSKNNAIEPRFSFQNSRHPSTRQKQFNATTIPENDIEKTDPWFAHRT'PMPKIQNVSSDDLMLLRQSPTPHG
FV 29-2224_ SFRNSSLNQEEEEFNLTALALENGTEFVSSNTDIIVGSNYS-----SPSNISKFTVNNLAE-----PQKAPSHQOATTAGSPLRHLIGKNSV---
CP 20-1065_ -----
HP 24-1158_ -----

910 920 930 940 950 960 970 980 990 1000
FVIII 20-2351_ LSLSDLQEAKEYETFSDDPSPGAIDSNNLSLSEMHFRPQLHHS'GDMVFTPE'SGLQLRLNEKLGTTAATELKKLDFKVSSTSNNLISTIPSDNLAAGTDNTS
FV 29-2224_ --LNSSTA'EHSSPYSEDPIEDPLQPDVTGIRLLSLGAGEFKSQEHAKHKGPKVE--RDQAAKHRFSWMLLAHKVGRHLSQDTGSPSGMRPWEDLPSQD
CP 20-1065_ -----
HP 24-1158_ -----

1010 1020 1030 1040 1050 1060 1070 1080 1090 1100
FVIII 20-2351_ SLGPPSMPVHYDSQLD'TTLFGKKSSP-----LTESGGPLSLSEENND'SKLL'ESGLMNSQESSWG-----KNVSSTESGRLFKGKRAHGPALLT
FV 29-2224_ TGSPSRMRPWKDP'PSDLLLLKQSNSSKILVGRWHLASEKGSYEIIQD'TDED'TAVNNWLI'SPQNASRAWGESTPLANKPKQSGHPKFP'RVVRHKS'LQVRQD
CP 20-1065_ -----
HP 24-1158_ -----

1110 1120 1130 1140 1150 1160 1170 1180 1190 1200
FVIII 20-2351_ KDNALFKVSI'SLLKTNKTSNNSATNRKTHIDGPSLLIENS'PSVWQNI'LES'DTEFKKV'TPLIHDRMLMDKNATALRLNHMSNKT'TSSKNMEMVQOKKEGPI
FV 29-2224_ GGSRLKKSQFLIKTRK-----KKKEKH'THAPLSPRTFHFPLRSEAYNTFSERRLKHS'LV-----LHKSNETSL
CP 20-1065_ -----
HP 24-1158_ -----

1810 1820 1830 1840 1850 1860 1870 1880 1890 1900
FVIII 20-2351_ LQSDQEE-----IDYDDTISVEMKKEDFDIYDEDENQSP---RSFQKKTRHYFFIAAVERLWDYGMSSSP-HVLRNRAQSGSV-----PQFK
FV 29-2224_ VQSEDDYAEIDYVVPYDDPYKTDVRT-NINSSRPDNIAAWYLRSNNGNRRNYYIAAEEISWDYSEFVQRETDIED-----SDDIPEDTTYK
CP 20-1065_ -----STFYLGERTYYIAAVEVEWDYSPQREWEKELHHLQEQNVS-NAFLDKGEFYIGSKYK
HP 24-1158_ -----RQRYQAARIYYIMAEEVEWDYCPDRSWEREWHNQSEKDSYGYIFLSNKDGLLGSRYK

1910 1920 1930 1940 1950 1960 1970 1980 1990 2000
FVIII 20-2351_ KVVFOEFTDGSFTQPLYRGEELNEHLGLLGPIYRAEVEDNIMVTFRNQASRPYSFYSSLLISYE--EDQRQGAEPKRF-----VKPNETKTYFWKVQHMH
FV 29-2224_ KVVFRKYLDSTFTKRDPGEYEEHLGILGPIIRAEDDDVIQVRFKNLASRPYSLHAHGLSYEKSSEKTYEDDSPWFKEDNAVQPNSSYTYVWHATERS
CP 20-1065_ KVVYRQYTDSTFRVPPERKAEELGILGPIIADVGDVKVIIFKNMATRPYSIHAHGVQTESSTVTP-----TLPGETLTYVWKIPERS
HP 24-1158_ KAVFREYTDGTFRIPRPTGPEEHLGILGPLIKGEVGDILTVMVFKNNASRPYSVHAHGV-LESTTVWP-----LAAEPGEVVTYQWNIERS

2010 2020 2030 2040 2050 2060 2070 2080 2090 2100
FVIII 20-2351_ APTKDEFCKAWAYFSDVDLEKDVHSLIGPLLCHTNTLNPAHGRQVTVQEFALFFTIFDETksWYFTENMERN-CRAPCNIQMEDPTFKENYRFHAIN
FV 29-2224_ GPESPGSACRAWAYYSAVNPEKDIHSLIGPLLICQKGIHLKDSNMPMDMREFVLLFMTFDEKKSWYEEKSRSSWRLTSSEM-----KSHEFHAIN
CP 20-1065_ GAGTEDSACIPWAYYSTVDQVKDLYSGLIGPLIVCRRPYLKVFNPRRKL--EFALLFLVFDENESWYLDNIIKTY-SDHPEKVNKDDEEFIESNKMHAIN
HP 24-1158_ GPGPNDSACVSWIYYSAVDPIKDMYSGLVGPLAICQKGILEPHGGRSDMDREFALLFLIFDENKSWYLEENVATHGSQDPGSINLQDETFLIESNKMHAIN

2110 2120 2130 2140 2150 2160 2170 2180 2190 2200
FVIII 20-2351_ GYIMDTLPGLVMAQDQRIRWYLLSMGSNENIHSIHFSGHVFTVRKKEEYKMALYNLYPGVFETVEMLPKAGIWRVECLIGEHLHAGMSTLFLVYSNKCQ
FV 29-2224_ GMIY-SLPGLKMYEQEWVRLHLLNIGGSQDIHVVFHFGQTLLNENKQHQQLGVWPLLPGSFKTLEMKASKPGWLLNTEVGENQRAGMQTPFLIMDRDCR
CP 20-1065_ GRMFGNLQGLTMHVGDENVWYLMGMGNEIDLHTVHFHGHFSFYKHRGVYSSDVFDIFPGTYQTLEMFPRTPGIWLHCHVTDHIHAGMETTYTVLQNET
HP 24-1158_ GKLYANLRGLTMYQGERVAWYMLAMQDQVLDLHTIHFHAEFLYRNGENYRADVVDLFPGTFEVEMVASNPGTWMHCHVTDHVFHAGMETLFTVFSRTEH

2210 2220 2230 2240 2250 2260 2270 2280 2290 2300
FVIII 20-2351_ TPLGMASGHIRDFOITASGOYQWAPKLARLHYSGSINAWSTKEPF-----SWIKVDLLAPMIHGIKTQGARQKFSSLYISQFIIMYSLDGGKKWQTYR
FV 29-2224_ MPMGLSTGIISDSQIKASEFLGYEPRLARLNNNGGSYNAWSVEKLAAEFASKPWIQVDMQKEVIITGIQTQGAKHLYLKSCTTEFYVAYSSNQINWQIFK
CP 20-1065_ KSG
HP 24-1158_ LSPLTVITKETEKAVPPRDIEEGNVKMLGMQIPIKNVEMLASVLVAISVTLILLVVALGGVVWYQHRQRKLRNRRSILDDSFKLLSFKQ

2310 2320 2330 2340 2350 2360 2370 2380 2390 2400
FVIII 20-2351_ GNSTGTLMVFFGNVDSSGIKHNIFFNPPITARYIRLHPHYSIRSTLRMELMGCDLNCSMPLGMESKAISDAQITASSYFTNMFAT-WSPSKARLHLQGR
FV 29-2224_ GNSTRNVMYFNGNSDASTIKENQFDPPIVARYIRISPTRAYNRPTLRLELOGCEVNGCSTPLGMENKGIENKQITASSFKKSWWGDYEPFRARLNAQGR
CP 20-1065_
HP 24-1158_

2410 2420 2430 2440 2450 2460 2470 2480 2490 2500
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FVIII 20-2351_ SNAWRPQVNNPKEWLQVDFQKTMKVTVGVTQGVKSLLSMYVKEFLISSSQDGHQWTLFFQNGKV--KVFQGNQDSFPPVNSLDPPLLTRYLRIPQSW
FV 29-2224_ VNAWQAKANNNKQWLEIDLKIKKITAITQGCKSLSEMVKSYTIHYSEQVEWKPYRLKSSMVDKIFEGNTNTKGHVKNFFNPPIISRFIRVIPKTW
CP 20-1065_
HP 24-1158_

 2510
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FVIII 20-2351_ VHQIALRMEVLGCEAODLY
FV 29-2224_ NQSIALRLELFGCDI---Y
CP 20-1065_
HP 24-1158_