Glutamate transporters
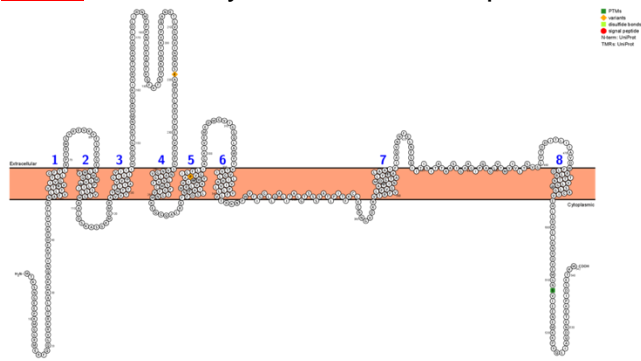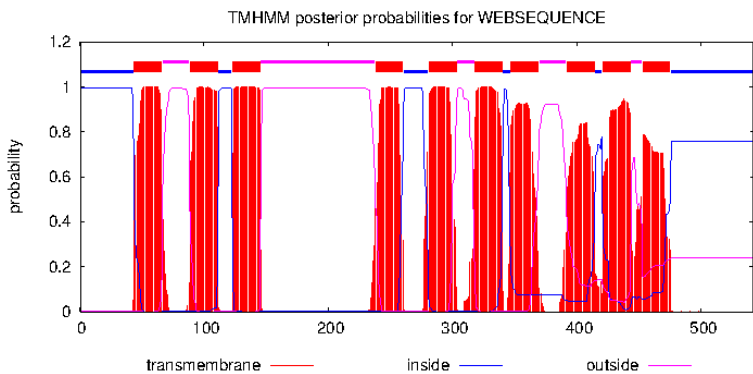
EAA1=Excitatory amino acid transporter 1= SLC1A3, P43003, 542aa

>sp|P43003|EAA1, HUMAN Excitatory amino acid transporter 1

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MTKSNGEEPKMGGRMERFQQGVRKRTLLAKKKVQNITKEDVKSYLFRNAFVLLTVTAVIV    60
GTILGFTLRPYRMSYREVKYFSFPGELLMRMLQMLVLPLIISSLVTGMAALDSKASGKMG   120
MRAVVYYMTTTIIAVVIGIIIVIIIHPGKGTKENMHREGKIVRVTAADAFLDLIRNMFPP   180
NLVEACFKQFKTNYEKRSFKVPIQANETLVGAVINNVSEAMETLTRITEELVPVPGSVNG   240
VNALGLVVFSMCFGFVIGNMKEQGQALREFFDSLNEAIMRLVAVIMWYAPVGILFLIAGK   300
IVEMEDMGVIGGQLAMYTVTVIVGLLIHAVIVLPLLYFLVTRKNPWVFIGGLLQALITAL   360
GTSSSSATLPITFKCLEENNGVDKRVTRFVLPVGATINMDGTALYEALAAIFIAQVNNFE   420
LNFGQIITISITATAASIGAAGIPQAGLVTMVIVLTSVGLPTDDITLIIAVDWFLDRLRT   480
TTNVLGDSLGAGIVEHLSRHELKNRDVEMGNSVIEENEMKKPYQLIAQDNETEKPIDSET   540
KM
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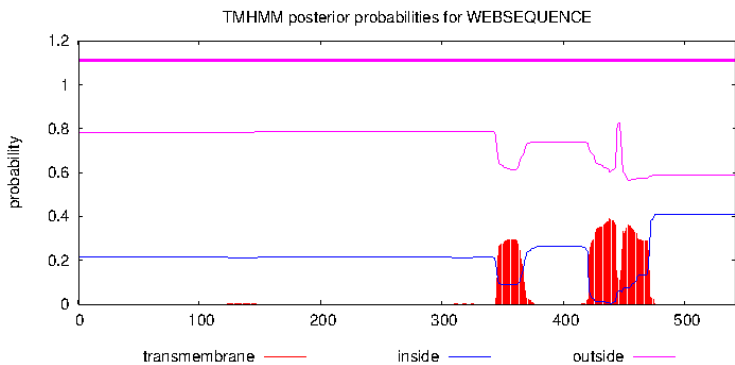

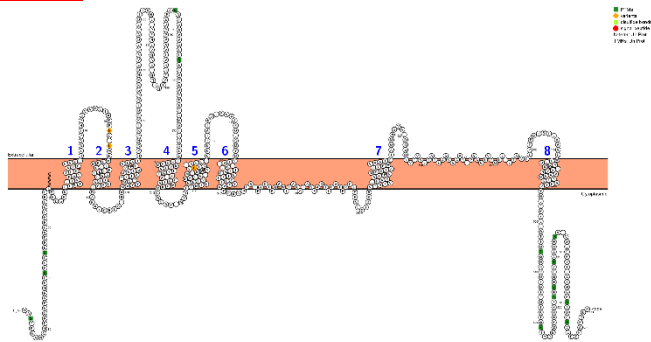QTY variant, EAA1^{QTY} L-> Q; I, V -> T; F -> Y (=QTY code)

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MTKSNGEEPKMGGRMERFQQGVRKRTLLAKKKVQNITKEDVKSYLFRNAYTQQTTTATTT    60
GTTQGYTQRPYRMSYREVKYFSFPGEQQMRMQQMQTQPQTTSSQTTGMAALDSKASGKMG   120
MRATTYYMTTTTTATTTGTTTTTTTHPGKGTKENMHREGKIVRVTAADAFLDLIRNMFPP   180
NLVEACFKQFKTNYEKRSFKVPIQANETLVGAVINNVSEAMETLTRITEELVPVPGSTNG   240
TNAQGQTTYSMCYGYTTGNMKEQGQALREYYDSQNEATMRQTATTMWYAPTGTQYQTAGK   300
IVEMEDMGVIGGQLAMYTTTTTTGQQTHATTTQPQQYYQTTRKNPWVFIGGLLQALITAL   360
GTSSSSATLPITFKCLEENNGVDKRTTRYTQPTGATTNMDGTAQYEAQAATYTAQVNNFE   420
LNFGQIITISITATAASIGAAGIPQAGLVTMVIVLTSVGLPTDDITLIIAVDWYQDRQRT   480
TTNTQGDSQGAGTTEHLSRHELKNRDVEMGNSVIEENEMKKPYQLIAQDNETEKPIDSET   540
KM
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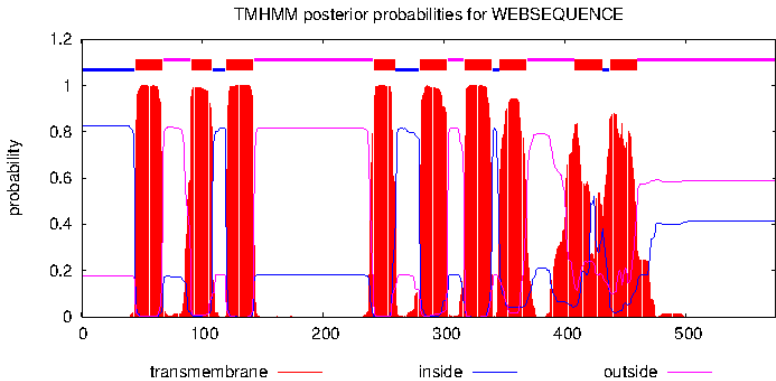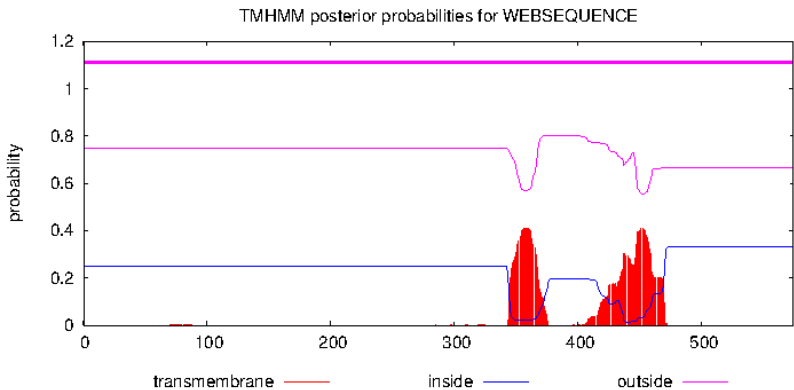
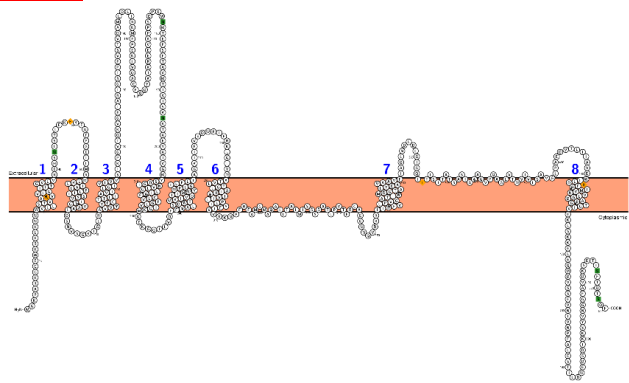# EAA2=Excitatory amino acid transporter 2= SLC1A2, P43004, 574aa

>sp|P43004|EAA2, HUMAN Excitatory amino acid transporter 2

MASTEGANNMPKQVEVRMHDSHLGSEEPKHRHLGLRLCDKLGKNLLLTLTVFGVILGAVC
GGLLRLASPIHPDVVMLIAFPGDILMRMLKMLILPLIISSLITGLSGLDAKASGRLGTRA
MVYYMSTTIIAAVLGVILVLAIHPGNPKLKKQLGPGKKNDEVSSLDAFLDLIRNLFPENL
VQACFQQIQTVTKKVLVAPPPDEEANATSAVVSLLNETVTEVPEETKMVIKKGLEFKDGM
NVLGLIGFFIAFGIAMGKMGDQAKLMVDFFNILNEIVMKLVIMIMWYSPLGIACLICGKI
IAIKDLEVVARQLGMYMVTVIIGLIIHGGIFLPLIYFVVTRKNPFSFFAGIFQAWITALG
TASSAGTLPVTFRCLEENLGIDKRVTRFVLPVGATINMDGTALYEAVAAIFIAQMNGVVL
DGGQIVTVSLTATLASVGAASIPSAGLVTMLLILTAVGLPTEDISLLVAVDWLLDRMRTS
VNVVGDSFGAGIVYHLSKSELDTIDSQHRVHEDIEMTKTQSIYDDMKNHRESNSNQCVYA
AHNSVIVDECKVTLAANGKSADCSVEEEPWKREK

TMHMM posterior probabilities for WEBSEQUENCE

transmembrane —   inside —   outside —

QTY variant, EAA2^{QTY} L-> Q; I, V -> T; F -> Y (=QTY code)

MASTEGANNMPKQVEVRMHDSHLGSEEPKHRHLGLRLCDKLGKNQQQTQTTYGTTQGATC
GGQQRLASPIHPDVVMLIAFPGDILMRMQKMQTQPQTTSSQTTGQSGQDAKASGRLGTRA
MTYYMSTTTTAATQGTTQTQATHPGNPKLKKQLGPGKKNDEVSSLDAFLDLIRNLFPENL
VQACFQQIQTVTKKVLVAPPPDEEANATSAVVSLLNETVTEVPEETKMVIKKGLEYKDGM
NTQGQTGYYTAYGTAMGKMGDQAKLMVDYYNTQNETTMKQTTMTMWYSPQGTACQTCGKI
IAIKDLEVVARQLGMYMTTTTTGQTTHGGTYQPQTYYTTTRKNPFSFFAGIFQAWITALG
TASSAGTLPVTFRCLEENLGIDKRTTRYTQPTGATTNMDGTAQYEATAATYIAQMNGVVL
DGGQIVTVSLTATLASVGAASIPSAGLVTMLLILTAVGLPTEDISLLVAVDWQQDRMRTS
TNTTGDSYGAGTTYHLSKSELDTIDSQHRVHEDIEMTKTQSIYDDMKNHRESNSNQCVYA
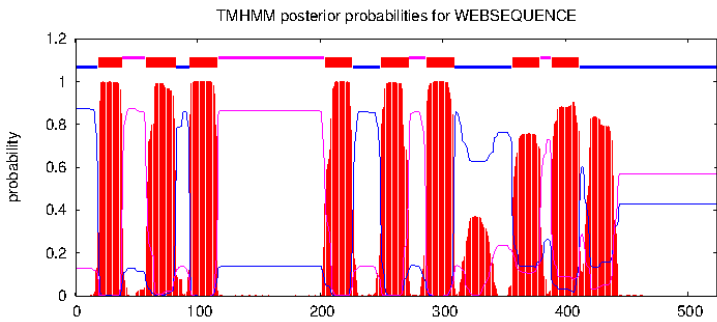AHNSVIVDECKVTLAANGKSADCSVEEEPWKREK

TMHMM posterior probabilities for WEBSEQUENCE

transmembrane —   inside —   outside —

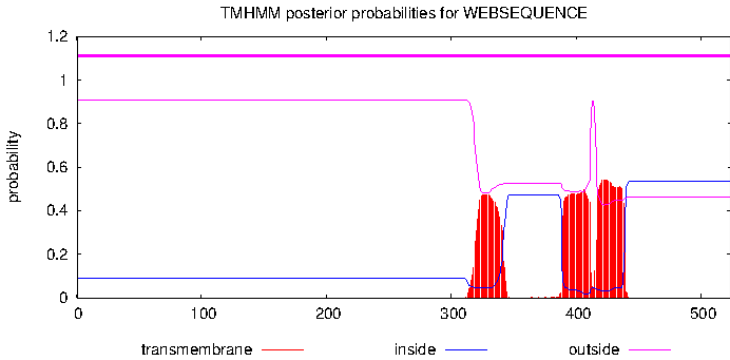EAA3=Excitatory amino acid transporter 3= SLC1A1, P43005, 524aa

>sp|P43005|EAA3, HUMAN Excitatory amino acid transporter 3

MGKPARKGCEWKRFLKNNWVLLSTVAAVVLGITTGVLVREHSNLSTLEKFYFAFPGEILM
RMLKLIILPLIISSMITGVAALDSNVSGKIGLRAVVYYFCTTLIAVILGIVLVVSIKPGV
TQKVGEIARTGSTPEVSTVDAMLDLIRNMFPENLVQACFQQYKTKREEVKPPSDPEMNMT
EESFTAVMTTAISKNKTKEYKIVGMYSDGINVLGLIVFCLVFGLVIGKMGEKGQILVDFF
NALSDATMKIVQIIMCYMPLGILFLIAGKIIEVEDWEIFRKLGLYMATVLTGLAIHSIVI
LPLIYFIVVRKNPFRFAMGMAQALLTALMISSSSATLPVTFRCAEENNQVDKRITRFVLP
VGATINMDGTALYEAVAAVFIAQLNDLDLGIGQIITISITATSASIGAAGVPQAGLVTMV
IVLSAVGLPAEDVTLIIAVDWLLDRFRTMVNVLGDAFGTGIVEKLSKKELEQMDVSSEVN
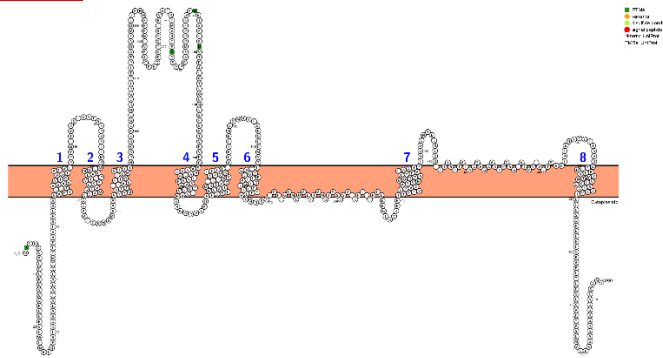IVNPFALESTILDNEDSDTKKSYVNGGFAVDKSDTISFTQTSQF

QTY variant, EAA3^{QTY} L-> Q; I, V -> T; F -> Y (=QTY code)

MGKPARKGCEWKRFLKNNWTQQSTTAATTQGTTTGTQTREHSNLSTLEKFYFAFPGEILM
RMQKQTTQPQTTSSMTTGTAAQDSNVSGKIGLRATTYYYCTTQTATTQGTTQTTSIKPGV
TQKVGEIARTGSTPEVSTVDAMLDLIRNMFPENLVQACFQQYKTKREEVKPPSDPEMNMT
EESFTAVMTTAISKNKTKEYKIVGMYSDGTNTQGQTTYCQTYGQTTGKMGEKGQILVDYY
NAQSDATMKTTQTTMCYMPQGTQYQTAGKIIEVEDWEIFRKLGLYMATTQTGQATHSTTT
QPQTYYTTVRKNPFRFAMGMAQALLTALMISSSSATLPVTFRCAEENNQVDKRTTRYTQP
TGATTNMDGTAQYEATAATYIAQLNDLDLGIGQIITISITATSASIGAAGVPQAGLVTMV
IVLSAVGLPAEDVTLIIAVDWQQDRYRTMTNTQGDAYGTGTTEKLSKKELEQMDVSSEVN
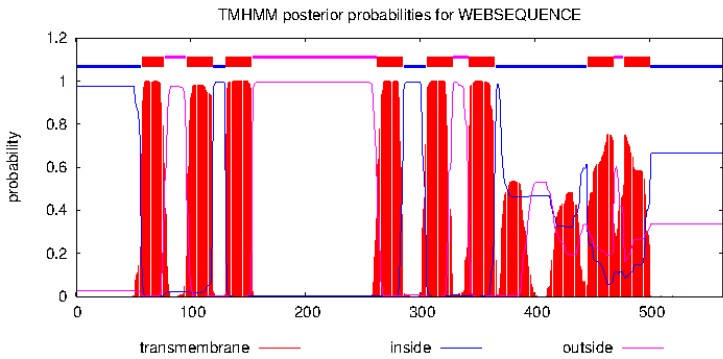IVNPFALESTILDNEDSDTKKSYVNGGFAVDKSDTISFTQTSQF

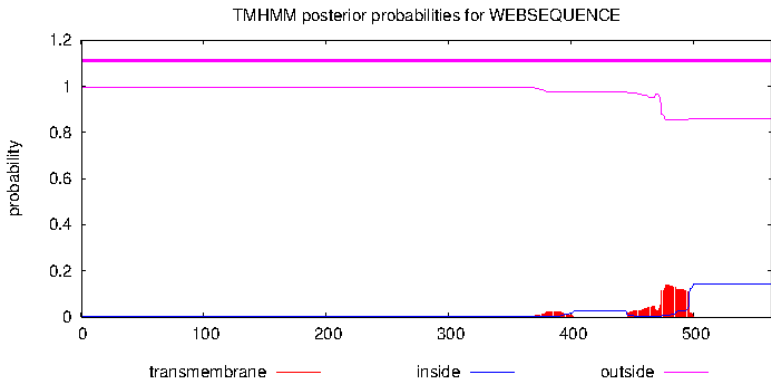EAA4=Excitatory amino acid transporter 4= SLC1A6, P48664, 564aa

>sp|P48664|EAA4, HUMAN Excitatory amino acid transporter 4

MSSHGNSLFLRESGQRLGRVGWLQRLQESLQQRALRTRLRLQTMTLEHVLRFLRRNAFIL
LTVSAVVIGVSLAFALRPYQLTYRQIKYFSFPGELLMRMLQMLVLPLIVSSLVTGMASLD
NKATGRMGMRAAVYYMVTTIIAVFIGILMVTIIHPGKGSKEGLHREGRIETIPTADAFMD
LIRNMFPPNLVEACFKQFKTQYSTRVVTRTMVRTENGSEPGASMPPPFSVENGTSFLENV
TRALGTLQEMLSFEETVPVPGSANGINALGLVVFSVAFGLVIGGMKHKGRVLRDFFDSLN
EAIMRLVGIIIWYAPVGILFLIAGKILEMEDMAVLGGQLGMYTLTVIVGLFLHAGIVLPL
IYFLVTHRNPFPFIGGMLQALITAMGTSSSSATLPITFRCLEEGLGVDRRITRFVLPVGA
TVNMDGTALYEALAAIFIAQVNNYELNLGQITTISITATAASVGAAGIPQAGLVTMVIVL
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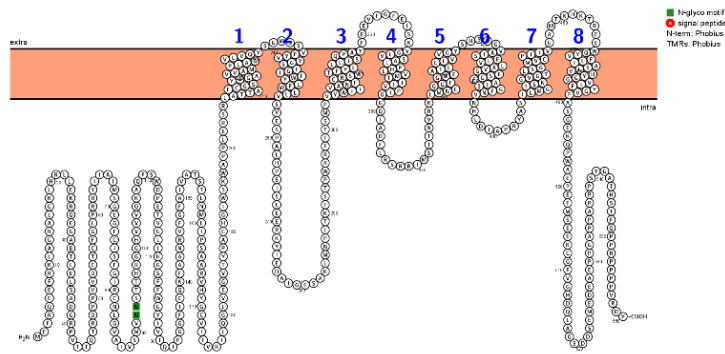KPYKSLMAQEKGASRGRGGNESAM

QTY variant, EAA4^{QTY}   L-> Q; I, V -> T; F -> Y (=QTY code)

MSSHGNSLFLRESGQRLGRVGWLQRLQESLQQRALRTRLRLQTMTLEHVLRFLRRNAYTQ
QTTSATTTGTSQAYAQRPYQLTYRQIKYFSFPGELLMRMQQMQTQPQTTSSQTTGMASQD
NKATGRMGMRAATYYMTTTTTATYTGTQMTTTTHPGKGSKEGLHREGRIETIPTADAFMD
LIRNMFPPNLVEACFKQFKTQYSTRVVTRTMVRTENGSEPGASMPPPFSVENGTSFLENV
TRALGTLQEMLSFEETVPVPGSANGTNAQGQTTYSTAYGQTTGGMKHKGRVLRDYYDSQN
EATMRQTGTTTWYAPTGTQYQTAGKILEMEDMAVLGGQLGMYTQTTTTGQYQHAGTTQPQ
TYYQTTHRNPFPFIGGMLQALITAMGTSSSSATLPITFRCLEEGLGVDRRTTRYTQPTGA
TTNMDGTAQYEAQAATYIAQVNNYELNLGQITTISITATAASVGAAGIPQAGLVTMVIVL
TSVGLPTEDITLIIAVDWYQDRQRTMTNTQGDSTGAATTEHLSQRELELQEAELTLPSLG
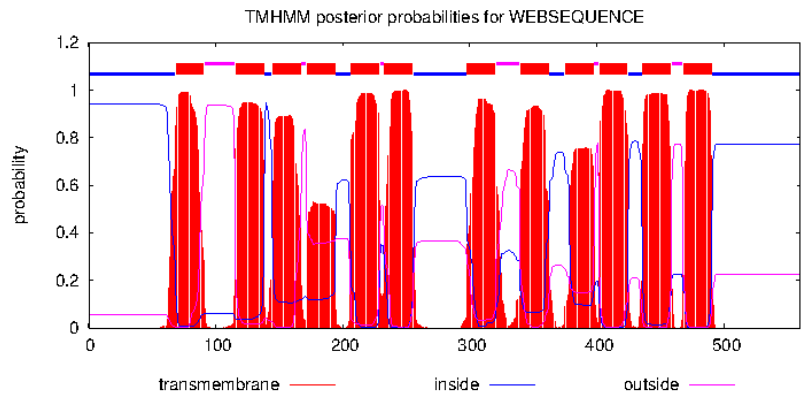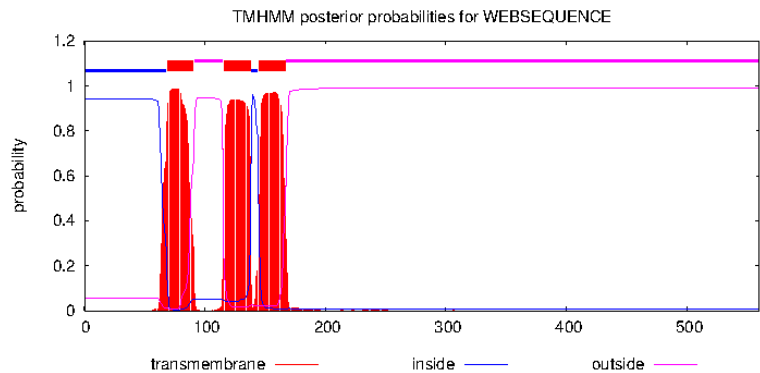KPYKSLMAQEKGASRGRGGNESAM

>sp|Q9P2U7| VGluT1, HUMAN Vesicular glutamate transporter 1

MEFRQEEFRKLAGRALGKLHRLLEKRQEGAETLELSADGRPVTTQTRDPPVVDCTCFGLP
RRYIIAIMSGLGFCISFGIRCNLGVAIVSMVNNSTTHRGGHVVVQKAQFSWDPETVGLIH
GSFFWGYIVTQIPGGFICQKFAANRVFGFAIVATSTLNMLIPSAARVHYGCVIFVRILQG
LVEGVTYPACHGIWSKWAPPLERSRLATTAFCGSYAGAVVAMPLAGVLVQYSGWSSVFYV
YGSFGIFWYLFWLLVSYESPALHPSISEEERKYIEDAIGESAKLMNPLTKFSTPWRRFFT
SMPVYAIIVANFCRSWTFYLLLISQPAYFEEVFGFEISKVGLVSALPHLVMTIIVPIGGQ
IADFLRSRRIMSTTNVRKLMNCGGFGMEATLLLVVGYSHSKGVAISFLVLAVGFSGFAIS
GFNVNHLDIAPRYASILMGISNGVGTLSGMVCPIIVGAMTKHKTREEWQYVFLIASLVHY
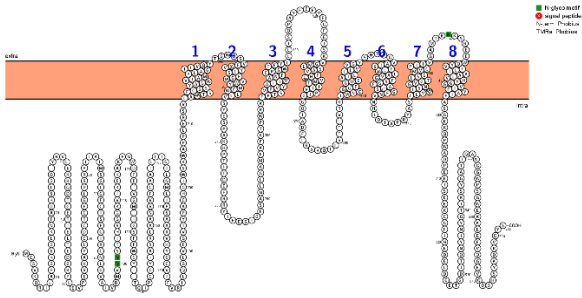GGVIFYGVFASGEKQPWAEPEEMSEEKCGFVGHDQLAGSDDSEMEDEAEPPGAPPAPPPS
YGATHSTFQPPRPPPPVRDY

QTY variant VgluT1^QTY   L-> Q; I, V -> T; F -> Y (=QTY code)

MEFRQEEFRKLAGRALGKLHRLLEKRQEGAETLELSADGRPVTTQTRDPPVVDCTCFGLP
RRYIIAIMSGLGFCISFGIRCNLGVAIVSMVNNSTTHRGGHVVVQKAQFSWDPETVGLIH
GSFFWGYIVTQIPGGFICQKFAANRVFGFAIVATSTLNMLIPSAARVHYGCVIFVRILQG
LVEGVTYPACHGIWSKWAPPLERSRQATTAYCGSYAGATTAMPQAGTQTQYSGWSSTYYT
YGSYGTYWYQFWQQTSYESPALHPSISEEERKYIEDAIGESAKLMNPLTKFSTPWRRFFT
SMPTYATTTANYCRSWTYYQQQTSQPAYFEEVFGFEISKTGQTSAQPHQTMTTTTPTGGQ
IADFLRSRRIMSTTNVRKQMNCGGYGMEATQQQTTGYSHSKGTATSFQTQATGYSGYATS
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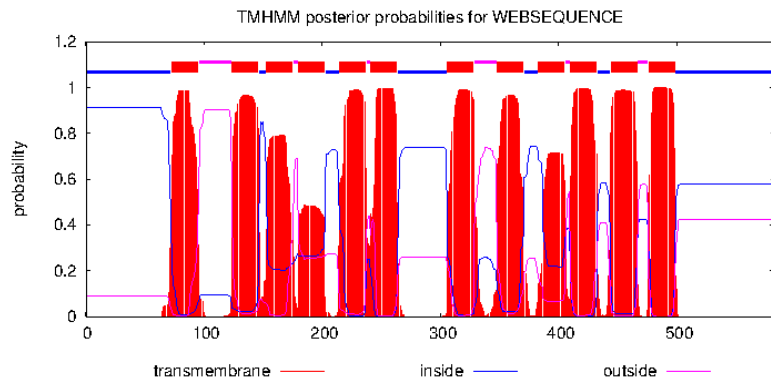GGTTYYGTYASGEKQPWAEPEEMSEEKCGFVGHDQLAGSDDSEMEDEAEPPGAPPAPPPS
YGATHSTFQPPRPPPPVRDY

5

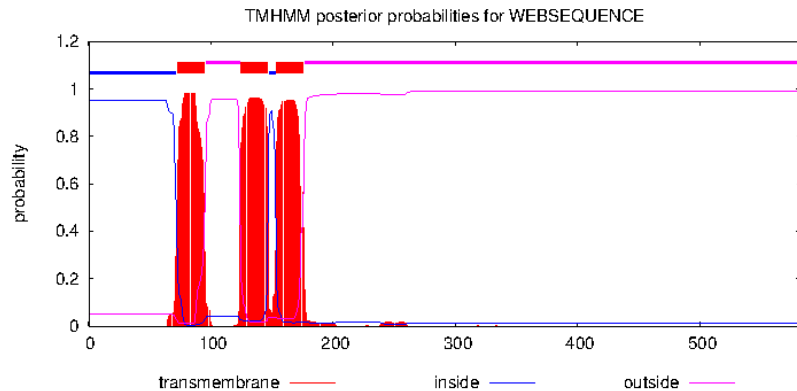VGLUT2 = Vesicular glutamate transporter 2= SLC17A6, Q9P2U8, 582aa

>sp|Q9P2U8| VGluT2, HUMAN Vesicular glutamate transporter 2

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MESVKQRILAPGKEGLKNFAGKSLGQIYRVLEKKQDTGETIELTEDGKPLEVPERKAPLC
DCTCFGLPRRYIIAIMSGLGFCISFGIRCNLGVAIVDMVNNSTIHRGGKVIKEKAKFNWD
PETVGMIHGSFFWGYIITQIPGGYIASRLAANRVFGAAILLTSTLNMLIPSAARVHYGCV
IFVRILQGLVEGVTYPACHGIWSKWAPPLERSRLATTSFCGSYAGAVIAMPLAGILVQYT
GWSSVFYVYGSFGMVWYMFWLLVSYESPAKHPTITDEERRYIEESIGESANLLGAMEKFK
TPWRKFFTSMPVYAIIVANFCRSWTFYLLLISQPAYFEEVFGFEISKVGMLSAVPHLVMT
IIVPIGGQIADFLRSKQILSTTTVRKIMNCGGFGMEATLLLVVGYSHTRGVAISFLVLAV
GFSGFAISGFNVNHLDIAPRYASILMGISNGVGTLSGMVCPIIVGAMTKNKSREEWQYVF
LIAALVHYGGVIFYAIFASGEKQPWADPEETSEEKCGFIHEDELDEETGDITQNYINYGT
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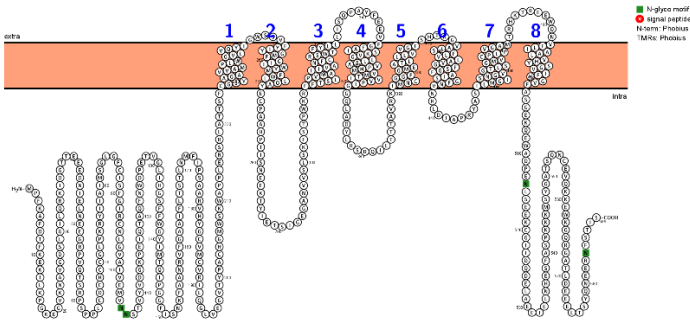

QTY variant VgluT2^QTY   L-> Q; I, V -> T; F -> Y (=QTY code)

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MESVKQRILAPGKEGLKNFAGKSLGQIYRVLEKKQDTGETIELTEDGKPLEVPERKAPLC
DCTCFGLPRRYIIAIMSGLGFCISFGIRCNLGVAIVDMVNNSTIHRGGKVIKEKAKFNWD
PETVGMIHGSFFWGYIITQIPGGYIASRLAANRVFGAAILLTSTLNMLIPSAARVHYGCV
IFVRILQGLVEGVTYPACHGIWSKWAPPLERSRQATTSYCGSYAGATTAMPQAGTQTQYT
GWSSTYYTYGSYGMTWYMYWQQTSYESPAKHPTITDEERRYIEESIGESANLLGAMEKFK
TPWRKYYTSMPTYATTTANYCRSWTYYQLLISQPAYFEEVFGFEISKTGMQSATPHQTMT
TTTPTGGQIADFLRSKQILSTTTVRKTMNCGGYGMEATQQQTTGYSHTRGTATSYQTQAT
GYSGYATSGYNTNHLDIAPRYASTQMGTSNGTGTQSGMTCPTTTGAMTKNKSREEWQYTY
QTAAQTHYGGTTYYATYASGEKQPWADPEETSEEKCGFIHEDELDEETGDITQNYINYGT
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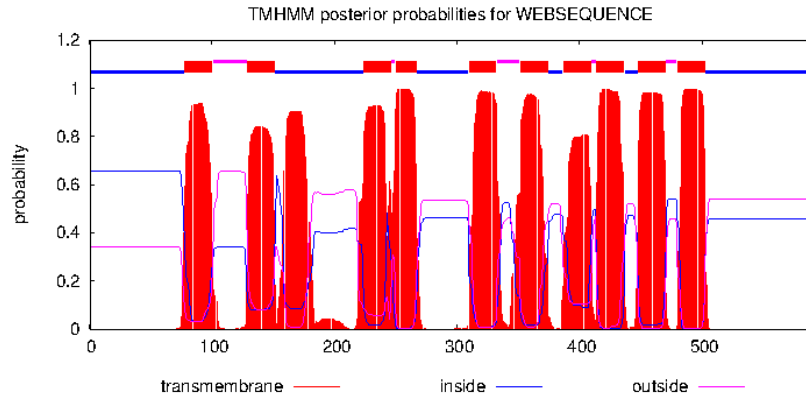
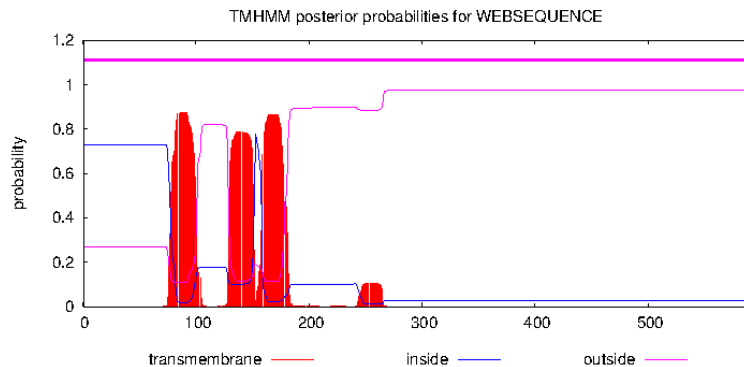VGLUT3= Vesicular glutamate transporter 3= SLC17A8, Q8NDX2, 589aa

>sp|Q8NDX2| VGluT3, HUMAN Vesicular glutamate transporter 3

MPFKAFDTFKEKILKPGKEGVKNAVGDSLGILQRKIDGTTEEEDNIELNEEGRPVQTSRP
SPPLCDCHCCGLPKRYIIAIMSGLGFCISFGIRCNLGVAIVEMVNNSTVYVDGKPEIQTA
QFNWDPETVGLIHGSFFWGYIMTQIPGGFISNKFAANRVFGAAIFLTSTLNMFIPSAARV
HYGCVMCVRILQGLVEGVTYPACHGMWSKWAPPLERSRLATTSFCGSYAGAVVAMPLAGV
LVQYIGWSSVFYIYGMFGIIWYMFWLLQAYECPAAHPTISNEEKTYIETSIGEGANVVSL
SKFSTPWKRFFTSLPVYAIIVANFCRSWTFYLLLISQPAYFEEVFGFAISKVGLLSAVPH
MVMTIVVPIGGQLADYLRSRQILTTTAVRKIMNCGGFGMEATLLLVVGFSHTKGVAISFL
VLAVGFSGFAISGFNVNHLDIAPRYASILMGISNGVGTLSGMVCPLIVGAMTRHKTREEW
QNVFLIAALVHYSGVIFYGVFASGEKQEWADPENLSEEKCGIIDQDELAEEIELNHESFA
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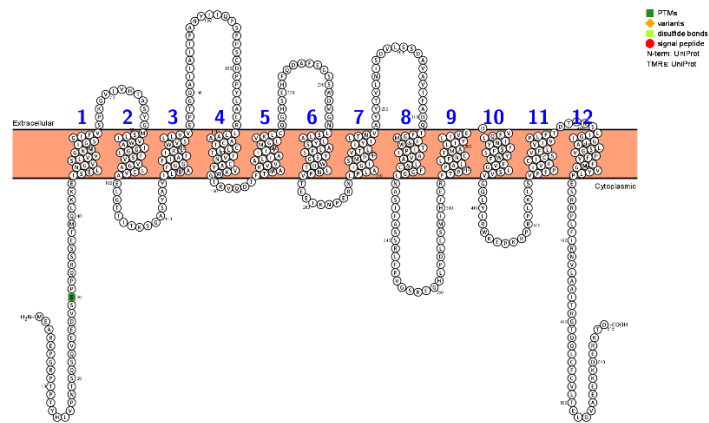QTY variant VgluT3^QTY   L-> Q; I, V -> T; F -> Y (=QTY code)

MPFKAFDTFKEKILKPGKEGVKNAVGDSLGILQRKIDGTTEEEDNIELNEEGRPVQTSRP
SPPLCDCHCCGLPKRYIIAIMSGLGFCISFGIRCNLGVAIVEMVNNSTVYVDGKPEIQTA
QFNWDPETVGLIHGSFFWGYIMTQIPGGFISNKFAANRVFGAAIFLTSTLNMFIPSAARV
HYGCVMCVRILQGLVEGVTYPACHGMWSKWAPPLERSRLATTSFCGSYAGATTAMPQAGT
QTQYTGWSSVYYTYGMYGTTWYMYWQQQAYECPAAHPTISNEEKTYIETSIGEGANVVSL
SKFSTPWKRYYTSQPTYATTTANYCRSWTFYQQLISQPAYFEEVYGYATSKTGQQSATPH
MTMTTTTPTGGQLADYLRSRQILTTTAVRKTMNCGGYGMEATQQQTTGYSHTKGTATSYQ
TQATGYSGYATSGYNTNHLDIAPRYASTQMGTSNGTGTQSGMTCPQTTGAMTRHKTREEW
QNTYQTAAQTHYSGTTYYGTYASGEKQEWADPENLSEEKCGIIDQDELAEEIELNHESFA
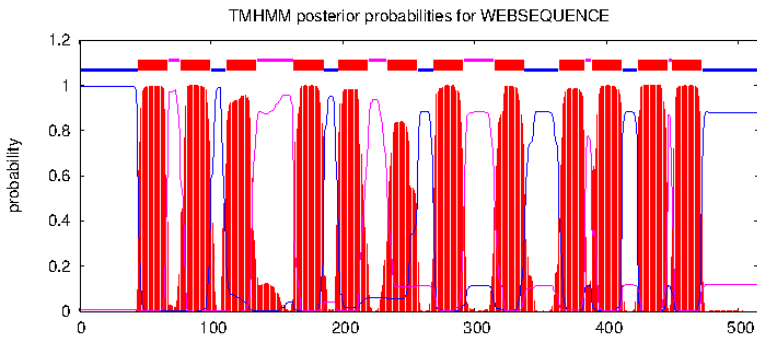SPKKKMSYGATSQNCEVQKKEWKGQRGATLDEEELTSYQNEERNFSTIS

7

YLAT2=Y+L amino acid transporter 2= SLC7A6, Q92536, 515aa

>sp|Q92536|YLAT2, HUMAN Y+L amino acid transporter 2

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MEAREPGRPTPTYHLVPNTSQSQVEEDVSSPPQRSSETMQLKKEISLLNGVSLVVGNMIG
SGIFVSPKGVLVHTASYGMSLIVWAIGGLFSVVGALCYAELGTTITKSGASYAYILEAFG
GFIAFIRLWVSLLVVEPTGQAIIAITFANYIIQPSFPSCDPPYLACRLLAAACICLLTFV
NCAYVKWGTRVQDTFTYAKVVALIAIIVMGLVKLCQGHSEHFQDAFEGSSWDMGNLSLAL
YSALFSYSGWDTLNFVTEEIKNPERNLPLAIGISMPIVTLIYILTNVAYYTVLNISDVLS
SDAVAVTFADQTFGMFSWTIPIAVALSCFGGLNASIFASSRLFFVGSREGHLPDLLSMIH
IERFTPIPALLFNCTMALIYLIVEDVFQLINYFSFSYWFFVGLSVVGQLYLRWKEPKRPR
PLKLSVFFPIVFCICSVFLVIVPLFTDTINSLIGIGIALSGVPFYFMGVYLPESRRPLFI
RNVLAAITRGTQQLCFCVLTELDVAEEKKDERKTD
```


QTY variant, YLAT2^QTY   L-> Q; I, V -> T; F -> Y (=QTY code)

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MEAREPGRPTPTYHLVPNTSQSQVEEDVSSPPQRSSETMQLKKETSQQNGTSQTTGNMTG
SGTYTSPKGVLVHTASYGMSQTTWATGGQYSTTGAQCYAELGTTITKSGASYAYTQEAYG
GYTAYTRQWTSQQTTEPTGQAIIAITFANYIIQPSFPSCDPPYLACRQQAAACTCQQTYT
NCAYTKWGTRVQDTYTYAKTTAQTATTTMGQTKQCQGHSEHFQDAFEGSSWDMGNQSQAQ
YSAQYSYSGWDTQNYTTEEIKNPERNQPQATGTSMPTTTQTYTQTNTAYYTVLNISDVLS
SDAVAVTFADQTYGMYSWTTPTATAQSCYGGQNASIFASSRLFFVGSREGHLPDLLSMIH
IERYTPTPAQQYNCTMAQTYQTTEDVYQQTNYYSYSYWYYTGQSTTGQLYLRWKEPKRPR
PLKLSTYYPTTYCTCSTYQTTTPQYTDTINSQTGTGTAQSGTPYYYMGTYQPESRRPLFI
RNVLAAITRGTQQLCFCVLTELDVAEEKKDERKTD
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