

Amino acid position 301st -450th

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1 FFSFNQTIIDGVCNGAAVQRAPEALRFNVDDTSVILAEGSIVLHTALGTFNFSFVCSNSSDPHLATFAIPLGATKVPYYCFCLKVDTYNSTVYKFLAVLHPTVREIVITKYGDVYVNLGYYLHLGLLDVAVTINFTHGHTDDDDVPGFWTIASTN
2 .....R.....IN.....N.....P.....C.....G.....P.....F.....S.....
3 .....R.....IN.....N.....P.....C.....P.....F.....S.....
4 .....M.....A.....IN.....L.....P.....C.....P.....I.....D.....F.....S.....
5 .....T.....IN.....A.....L.....N.....Y.....C.....P.....I.....F.....S.....
6 .....H.....IN.....D.....C.....P.....I.....F.....S.....
7 .....H.....IN.....D.....C.....P.....P.....F.....S.....
8 .....I.....A.....I.....H.....C.....P.....P.....F.....G.....S.....
9 .....I.....A.....I.....H.....C.....P.....P.....F.....G.....S.....
10 .....I.....A.....I.....H.....C.....P.....P.....F.....G.....S.....
11 .....I.....A.....I.....H.....C.....P.....P.....F.....G.....S.....
12 .....I.....A.....I.....H.....C.....P.....P.....F.....G.....S.....
13 .....IN.....IN.....I.....C.....P.....P.....F.....S.....
14 .....IN.....IN.....I.....C.....P.....P.....F.....S.....
15 .....IN.....IN.....I.....C.....P.....P.....F.....S.....
16 .....IN.....IN.....I.....C.....P.....P.....F.....S.....
17 .....IN.....N.....C.....P.....P.....F.....S.....
18 .....IN.....N.....C.....P.....P.....F.....S.....
19 .....IN.....N.....C.....P.....P.....F.....S.....
20 .....IN.....N.....C.....P.....P.....F.....S.....
21 .....IN.....N.....C.....P.....P.....F.....S.....
22 .....IN.....N.....C.....P.....P.....F.....S.....
23 .....IN.....N.....C.....P.....P.....F.....S.....
24 .....IN.....N.....C.....P.....P.....F.....S.....
25 .....IN.....N.....C.....P.....P.....F.....S.....
26 .....IN.....N.....C.....P.....P.....F.....S.....
27 .....IN.....N.....C.....P.....P.....F.....S.....
28 .....IN.....N.....C.....P.....P.....F.....S.....
29 .....IN.....N.....C.....P.....P.....F.....S.....
30 .....H.M.....D.....IN.....A.....L.....I.....E.....P.....F.....S.....
31 .....H.M.....D.....IN.....L.....I.....E.....P.....F.....S.....
32 .....H.M.....D.....IN.....L.....I.....E.....PS.....Y.....S.....
33 .....H.M.....D.....IN.....L.....I.....E.....P.....F.....S.....
34 .....W.....IN.....L.....N.S.I.C.....C.....P.....F.....A.G.....S.....
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Amino acid position 451st -600th

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1 FVDALIEVQGTAIQRILYCDPVSQKLCSCQVAFDLDDGFYPISSRNLLSHEQPISFVTLPSFNHDSFVNITVSASFGGHSGANLIASDITTINGFSSEFCVDTRQFTISLFYNVTNSYGYVSKSQDSNCPFTLQSVNDYLSFSKFCVSTSL
2 .....
3 .....
4 .....
5 .....Y.....S.....R.....S.....N.....
6 .....V.....S.....E.....V.....P.....V.....I.....N.....
7 .....V.....S.....E.....V.....P.....V.....
8 .....T.....T.....K.....A.....R.....R.....R.....PT.....G.....G.....
9 .....T.....T.....K.....A.....R.....R.....R.....PT.....G.....G.....
10 .....T.....T.....A.....W.....S.....PT.....G.....G.....
11 .....T.....T.....A.....W.....S.....PT.....
12 .....T.....T.....A.....W.....S.....PT.....
13 .....T.....T.....A.....
14 .....R.....T.....T.....A.....
15 .....R.....T.....T.....A.....
16 .....R.....T.....T.....A.....
17 .....R.....T.....T.....A.....
18 .....
19 .....
20 .....
21 .....
22 .....
23 .....
24 .....
25 .....
26 .....
27 .....
28 .....
29 .....
30 .....S.....C.....L.....L.....G.....A.....L.S.....V.....W.N.....T.....P.K.....PA.N.....
31 .....S.....A.....L.S.....V.....T.....
32 .....S.....A.....L.S.....V.....T.....
33 .....S.....A.....L.S.....V.....T.....
34 .....S.....A.....L.S.....V.....T.....G.....
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Amino acid position 601st -750th

1	ASACTIDLFGYPEFGSGVKFTSLYFQFTKGEELITGTPKPLEGVTDVSEFMTLDVCTKYTIYGFKGEIITLTNSSFLAGVYYTSDSGQLLAFKNVTSGAVYSVTPCSFSEQAAYVDDDIVGIISLSSTFNSTRELPGFFYHSNDGSNCT
2	.....D.....V.....N.....
3	.....D.....V.....N.....
4	.....D.....L.....L.....F.....N.....
5	.....A.....L.....L.....F.....N.....
6	.....H.D.....D.....V.....A.....S.N.....
7	.....H.D.....D.....V.....A.....S.N.....
8	.....H.D.....D.....V.....V.....S.N.....
9	.....V.....V.....
10	.....V.....V.....
11	.....V.....V.....
12	.....V.....V.....
13	.....S.....V.....
14	.....V.....V.....
15	.....V.....V.....
16	.....V.....V.....
17	.....V.....V.....
18	.....V.....V.....
19	.....V.....V.....
20	.....V.....V.....
21	.....V.....V.....
22	.....V.....V.....
23	.....V.....V.....
24	.....V.....V.....
25	.....V.....V.....
26	.....V.....V.....
27	.....V.....V.....
28	.....V.....V.....
29	.....I.....V.....
30	.....G.....A.....L.....I.....I.....I.....N.....V.....N.....SN.....
31	.....G.....A.....L.....I.....I.....I.....N.....V.....N.....N.....
32	.....G.....A.....L.....I.....I.....I.....N.....V.....N.....N.....
33	.....G.....A.....L.....I.....I.....I.....N.....V.....N.....N.....
34	.....G.....D.....I.....I.....V.....KV.KS.DS.....

Amino acid position 751st -900th

1	EPVLVYSNIGVCKSGSIGYVPSQSGQVKIAPTVTGNISIPTNFSMSIRTEYLQLYNTPVSVDCATYVCNGNSRCKQLLTQYTAACKTIESALQLSARLESVEVNSMLTISEEALQLATISSFNGDGYNFTNVLGVSVEEPASGRVVKRS
2	.....
3	.....
4	.....A.T.....I.....
5	.....A.....
6	.....
7	.....
8	.....P.A.....D.....
9	.....P.A.....D.....
10	.....P.A.....P.....D.....
11	.....P.A.....P.....D.....
12	.....A.....P.....D.....
13	.....A.....D.....
14	.....R.....A.....D.....
15	.....R.....A.....D.....
16	.....R.....A.....D.....
17	.....D.....D.....
18	.....D.....D.....
19	.....D.....D.....
20	.....D.....D.....
21	.....D.....D.....
22	.....D.....D.....
23	.....D.....D.....
24	.....D.....D.....
25	.....D.....D.....
26	.....D.....D.....
27	.....D.....D.....
28	.....D.....D.....
29Y.....E.....DSC.....I.E.....
30P.Y.....L.....A.....D.....
31P.Y.....A.....D.....
32Y.....A.....D.....
33Y.....A.....D.....
34L.G.....T.....A.....D.....

Amino acid position 901st -1050th

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1 FIEDLLFNKVVVTNGLGTVDEDEYKRCSNGRSVADLVCAQYYSGVMVLPGVVDAEKLMYSASLIGGMALGGFTAATAALPFSYAVQARLNLYLVLQTDVLCQRNQCPLLAESFNSAIGNIASAFESVKEAISQSSQGLNTVAHALTKVVEEVSNWQ
2 .....A.....C.....T.....D.....T.....V.....S.....
3 .....A.....C.....T.....D.....T.....V.....S.....
4 .....A.....C.....T.....D.....T.....V.....S.....
5 .....A.....C.....T.....T.....T.....V.....S.....
6 .....A.....C.....T.....T.....T.....V.....S.....
7 .....A.....C.....H.....T.....T.....V.....S.....
8 .....V.....A.....C.....T.....T.....K.....V.....S.....
9 .....V.....A.....C.....T.....T.....K.....V.....S.....
10 .....V.....A.....C.....T.....T.....K.....V.....S.....
11 .....V.....A.....C.....T.....T.....K.....V.....S.....
12 .....V.....A.....C.....T.....T.....K.....A.....V.....S.....
13 .....V.....A.....C.....T.....T.....K.....V.....S.....
14 .....V.....A.....C.....T.....T.....K.....V.....S.....
15 .....V.....A.....C.....T.....T.....K.....V.....S.....
16 .....V.....A.....C.....T.....T.....K.....V.....S.....
17 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
18 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
19 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
20 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
21 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
22 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
23 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
24 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
25 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
26 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
27 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
28 .....V.....S.....A.....C.....T.....T.....K.....V.....S.....
29 .....K.....L.....V.....A.....C.....T.....A.....T.....K.....V.....S.....
30 V.....V.....T.....N.....A.....C.....T.....T.....K.....V.....S.....
31 V.....I.....T.....N.....A.....C.....T.....T.....K.....V.....S.....
32 V.....I.....T.....N.....A.....C.....T.....T.....K.....V.....S.....
33 V.....I.....T.....N.....A.....C.....T.....T.....K.....V.....S.....
34 .....A.....V.....F.....A.....C.....T.....T.....K.....V.....S.....

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Amino acid position 1051st -1200th

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1 GEALSQTLIQLQHNFQAISSSTDDIYSRLDILSADVQVDRDLITGRLSALNAFVAQTLTKYTEVQASRRLAQQKVNKQSKQRYGFCGGDGEHIFSLVQAAFPQGLLFLHTVLVPGNFVNVTAIAGLCVNDIALLTLREPGLVLFTHLQ
2 .A.P..T.....I..T.....D.....
3 .A.P..T.....I..T.....D.....
4 .A.....I.....D.....
5 .A.....I.....D.....
6 .A.....I.....D.....
7 .A.....I.....D.....
8 .A.T..V.....I.....K.....D..I.....E.....
9 .A.T..V.....I.....K.....D..I.....E.....
10 .A.T..V.....I.....K.....D..I.....E.....
11 .A.T..V.....I.....K.....D..I.....E.....
12 .A.T..V.....I.....K.....D..I.....E.....
13 .A.T..V.....I.....K.....D..I.....E.....
14 .A.T..V.....I.....K.....D..I.....E.....
15 .A.T..V.....I.....K.....D..I.....E.....
16 .A.T..V...L.....I.....K.....D..I.....E.....
17 .A.T..V.....I.....K.....SD..D..I.....E.....
18 .A.T..V.....I.....K.....SD..D..I.....E.....
19 .A.T..V.....I.....K.....SD..D..I.....E.....
20 .A.T..V.....I.....K.....SD..D..I.....E.....
21 .A.T..V.....I.....K.....SD..D..I.....E.....
22 .A.T..V.....I.....K.....SD..D..I.....E.....
23 .A.T..V.....I.....K.....SD..D..I.....E.....
24 .A.T..V.....I.....K.....SD..D..I.....E.....
25 .A.T..V.....I.....K.....SD..D..I.....E.....
26 .A.T..V.....I.....K.....SD..D..I.....E.....
27 .A.T..V.....I.....K.....SD..D..I.....E.....
28 .A.T..V.....I.....K.....SD..D..I.....E.....
29 .S..T.....I.....K.....D..I.....G.....V.....
30 .S..N..V.....I.....K.....R.....D..L.....GE.....
31 .S..N..V.....I.....K.....L.....D..L.....GE.....
32 .S..N..V.....I.....K.....L.....D..L.....GE.....
33 .S..N..V.....I.....K.....D..L.....GE.....
34 .A..T..V..P.....I.....K.....D..I.....E.....

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Amino acid position 1201st -1350th

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1  THTATEYFVSSRRMFEPRKPTVSDFVQIESCVVTVYNLTSDCQLPDIPIIDYIDVNKTLDEILASLPNRTDPSFPLDVFENATYLNLTGEIADLEQRSESLRNTTEELRSLIYNINNTLVLDLEWLNVRVETIKWPPWWWLIIFVILFVVSLL
2  .....R.....H.....G.....L.....
3  .....R.....H.....G.....L.....
4  .....G.....F.....
5  .....L.....
6  .....L.....
7  .....L.....
8  ~D.....Y.....G.....R.....E.....G.....LS.....N.....KH.....C.....F.....
9  ~D.....Y.....G.....R.....E.....G.....LS.....N.....KH.....C.....F.....
10 ~D.....Y.....G.....R.....E.....G.....LS.....N.....KH.....C.....F.....
11 ~D.....Y.....G.....R.....E.....G.....LS.....N.....KH.....C.....F.....
12 ~D.....Y.....G.....R.....E.....G.....LS.....N.....K.....FD.....
13 ~D.....Y.....G.....R.....E.....G.....LS.....
14 ~D.....Y.....G.....R.....E.....G.....LS.....
15 ~D.....Y.....G.....R.....E.....G.....LS.....
16 ~D.....Y.....G.....R.....E.....G.....LS.....
17 N.....R.....G.....L.....
18 N.....R.....G.....L.....
19 N.....R.....G.....L.....
20 N.....R.....G.....L.....
21 N.....R.....G.....L.....
22 N.....R.....G.....L.....
23 N.....R.....G.....L.....
24 N.....R.....G.....L.....
25 N.....R.....G.....L.....
26 N.....R.....G.....L.....
27 N.....R.....G.....L.....
28 N.....R.....G.....L.....
29 Y.....Q.....G.....NL.....G.....
30 Y.....KNG.....L.....IF.....P.....FF.....F.....N.....F.....NG.....G.....
31 NY.....NG.....L.....N.....
32 Y.....G.....L.....N.....V.....
33 Y.....G.....L.....N.....V.....
34 NYN.....A.....R.....G.....L.....F.....M.....L.....N.....Q.....AT.....I

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Amino acid position 1351st -1392nd

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1  VFCCISTGCCGCGCCACFSGCCRGPRLQPYEAFKVVHQ*
2  .....C.....*
3  .....*
4  .....*
5  .....*
6  .....*
7  .....*
8  .....G.....*
9  .....G.....*
10 .....G.....*
11 .....G.....*
12 .....G.....*
13 .....G.....*
14 .....G.....*
15 .....G.....*
16 .....G.....*
17 .....V.....*
18 .....V.....*
19 .....V.....*
20 .....V.....*
21 .....V.....*
22 .....V.....*
23 .....V.....*
24 .....V.....*
25 .....V.....*
26 .....V.....*
27 .....V.....*
28 .....V.....*
29 .....G.....W.....G.....*
30 .....G.....*
31 .....G.....*
32 .....G.....*
33 LGG.....A.....S.....YS.....ETV.....F.....*
34

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1. TH1 NPPED0108 KC764953
2. TH1 P1314-VCF-071401A KX981897
3. TH2 P1414-SPF-071403A KX981898
4. Korea KNU-0902 GU180145
5. Korea KDGG10YO KJ857466
6. China CNU-091222-01 JN184634
7. China CNU-091222-02 JN184635
8. TH4 CBR1 KR610993
9. Vietnam VN/JFP1013_1/2013/Vinh KJ960178
10. TH4 CBR2 KR610994
11. Vietnam VN/VAP1113_1/2013/Vung KJ960179
12. Vietnam VN/KCHY-310113/2013/KhoaiChau KJ960180
13. China CH/GXNN/2012 JX018179
14. China GDU KU985230
15. China GD-A JX112709
16. China GD-1 JX647847
17. TH6 P1915-NPF-071511A KX981900
18. Japan NIG-1/JPN/2014 LC063830
19. Japan GNM-2/JPN/2014 LC063829
20. USA USA/Ohio75/2013 KJ645670
21. USA USA/Ohio69/2013 KJ645665
22. USA USA/Ohio60/2013 KJ645657
23. Japan MIE-1/JPN/2014 LC063827
24. Korea KUIDL-PED-2014-002 KJ588063
25. Korea KUIDL-PED-2014-007 KJ588062
26. USA USA/Indiana/17846/2013 KF452323
27. USA ISU13-19338E-IN-homogenate KF650370
28. USA PC21A KR078299
29. TH3 PXX11-SBF-021102A KX981899
30. TH5 EAS1 KR610991
31. Korea DR13 DQ862099
32. UK Br1/87 Z25483
33. Belgium CV777 AF353511
34. TH2 PXX08-SPF-020801A KY000559