



Supporting information

Nicotinic receptor subunits atlas in the adult human lung

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1. Supporting information Tables

	Non-Smok	ers (n=42)	Smokers	(n=111)	
CHRN	Detection (%)	SD	Detection (%)	SD	р
A1	31.11	11.48	40.17	15.96	***
A2	29.43	18.56	42.70	15.97	***
A3	19.64	35.77	4.65	19.64	*
A4	21.93	39.78	5.04	21.21	*
A5	45.39	27.60	47.80	15.67	ns
A6	50.95	30.07	57.04	16.94	ns
A7	0.00	0.0	25.53	34.62	NA
A9	55.71	19.48	31.49	26.00	***
A10	71.02	17.65	68.19	15.47	ns
B1	80.99	11.40	81.80	9.33	ns
B2	20.37	37.01	4.61	19.40	*
B3	53.87	31.47	64.87	18.65	*
B4	26.84	18.74	46.92	26.15	***
D	65.00	13.14	40.45	31.39	***
Ε	76.07	13.68	75.21	8.35	ns
G	21.05	38.22	4.73	19.88	*

 Table S1. Percentages of detection of each nAChR subunit in whole lung tissue transcriptomes.

ns, non-significate; SD, standard deviation; NA, not applicable. Coloured subunits indicate upregulation (green) and downregulation (red) in both groups when statistically significate.

Table S2. Repartitions of the gene expressions of each nAChR subunit in whole lung tissue transcriptomes.

	Non-Smokers (n=42)		Smokers		
CHRN	Expression (%)	SD	Expression (%)	SD	р
A1	7.09	2.36	9.20	3.44	***
A2	4.20	2.59	6.32	2.37	***
A3	2.17	3.94	0.51	2.14	***
A4	2.05	3.72	0.47	1.97	***
A5	7.00	4.17	7.59	2.40	ns
A6	6.38	3.76	7.31	2.06	ns

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A7	0.00	0.00	2.80	3.81	NA
A9	5.13	2.12	2.84	2.42	***
A10	14.79	3.23	14.34	3.00	ns
B1	15.29	1.72	15.55	1.618	ns
B2	2.66	4.83	0.60	2.51	***
B3	6.33	3.68	7.83	2.17	**
B4	3.47	2.35	6.33	3.64	***
D	8.15	1.79	5.02	3.91	***
Ε	12.76	1.85	12.73	1.22	ns
G	2.53	4.58	0.56	2.37	***

ns, non-significate; SD, standard deviation; NA, not applicable. Coloured subunits indicate upregulation (green) and downregulation (red) in both groups when statistically significate.

	Non-Smol	kers (n=5)	Smoker	s (n=5)	
CHRN	Detection (%)	SD	Detection (%)	SD	р
A1	0.00	0.00	0.00	0.00	NA
A2	0.00	0.00	0.00	0.00	NA
A3	20.00	44.72	6.48	14.50	ns
A4	0.00	0.00	0.00	0.00	NA
A5	79.80	33.01	45.57	15.82	*
A6	20.00	44.72	13.57	30.33	ns
A7	74.13	23.32	47.17	30.96	ns
A9	49.00	35.99	32.56	28.86	ns
A10	59.49	25.23	28.97	18.51	*
B1	0.00	0.00	34.44	48.17	NA
B2	8.88	19.88	28.50	44.00	ns
B3	0.00	0.00	0.00	0.00	NA
B4	0.00	0.00	20.00	44.72	NA
D	0.00	0.00	0.00	0.00	NA
Ε	70.50	23.07	39.02	15.03	*
G	13.71	30.65	25.86	43.34	ns

Table S3. Percentages of detection of each nAChR subunit in LAEC transcriptomes.

ns, non-significate; SD, standard deviation; NA, not applicable. Coloured subunits indicate upregulation (green) and downregulation (red) in both groups when statistically significate.

	-			-	
	Non-Smok	ers (n=5)	Smokers	s (n=5)	
CHRN	Expression (%)	SD	Expression (%)	SD	р
A1	0.00	0.00	0.00	0.00	ns
A2	0.00	0.00	0.00	0.00	ns
A3	1.01	2.26	0.50	1.13	ns
A4	0.00	0.00	0.00	0.00	ns
A5	17.98	9.69	19.73	18.14	ns

0
0

A6	0.73	1.63	0.70	1.56	ns
A7	33.29	12.50	24.63	16.38	ns
A9	22.82	14.14	20.23	16.04	ns
A10	18.00	2.99	11.26	7.32	ns
B1	0.00	0.00	1.81	2.63	NA
B2	0.60	1.33	11.02	21.25	NA
B3	0.00	0.00	0.00	0.00	ns
B4	0.00	0.00	0.61	1.37	NA
D	0.00	0.00	0.00	0.00	ns
Ε	2.99	3.21	6.38	6.25	ns
G	2.58	5.77	3.13	5.15	ns

ns, non-significate; SD, standard deviation ; NA, not applicable.

Table S5. Percentages of d	letection of each nAChR	subunit in SAEC	transcriptomes.

	Non-Smok	ers (n=63)	Smokers	(n=72)	
CHRN	Detection (%)	SD	Detection (%)	SD	р
A1	19.76	18.19	17.94	16.64	ns
A2	40.37	19.26	38.47	18.26	ns
A3	28.09	18.87	29.69	21.35	ns
A4	26.91	21.26	26.16	20.95	ns
A5	19.34	12.45	25.44	19.05	*
A6	44.07	22.46	49.31	21.30	ns
A7	33.33	17.59	42.75	23.26	**
A9	42.73	22.00	39.41	17.81	ns
A10	35.52	17.83	35.41	16.35	ns
B1	39.45	21.82	42.64	20.75	ns
B2	35.57	17.80	48.21	20.14	***
B3	29.03	20.59	37.20	21.75	*
B4	15.82	13.51	20.19	20.67	ns
D	21.04	18.37	20.74	16.82	ns
Ε	26.68	17.79	32.67	23.12	ns
G	29.29	20.95	30.43	23.50	ns

ns, non-significate; SD, standard deviation. Coloured subunits indicate upregulation (green) and downregulation (red) in both groups when statistically significate.

Table S6. Repartition	ons of the gene exp	ressions of each n.	AChR subunit in	SAEC transcrip	ptomes
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	Non-Smoke	ers (n=63)	Smokers	(n=72)	
CHRN	Expression (%)	SD	Expression (%)	SD	р
A1	2.41	1.70	2.03	1.68	ns
A2	9.43	3.86	8.13	3.77	*
A3	4.23	2.37	3.95	2.46	ns
A4	3.37	2.22	3.04	2.33	ns

A5	2.83	1.56	3.24	1.81	ns
A6	4.95	2.00	5.11	1.99	ns
A7	8.61	3.46	9.93	4.61	*
A9	13.88	5.53	11.99	4.86	*
A10	13.76	5.08	12.62	4.55	ns
B1	6.87	3.07	6.78	2.81	ns
B2	13.89	4.98	16.81	5.17	**
B3	3.41	1.83	4.09	2.00	*
B4	2.14	1.35	2.46	2.04	ns
D	2.14	1.66	1.86	1.38	ns
Ε	3.41	2.34	3.62	2.57	ns
G	4.67	2.65	4.34	2.67	ns

ns, non-significate; SD, standard deviation. Coloured subunits indicate upregulation (green) and downregulation (red) in both groups when statistically significate.

Antibodies	Species	Reference	Companies	Concentrations
α1	Rabbit	HPA071554	Sigma-Aldrich	1:100
α2	Mouse	NBP2-61667	Novus Biological	1:50
α3	Rabbit	HPA029430	Sigma-Aldrich	1:100
α4	Mouse	NBP2-61674	Novus Biological	1:100
α5	Rabbit	HPA054381	Sigma-Aldrich	1:50
α6	Mouse	NBP2-61679	Novus Biological	1:100
α7	Mouse	NBP2-61738	Novus Biological	1:100
α9	Rabbit	26025-1-AP	Proteintech	1:100
α10	Mouse	NBP2-61666	Novus Biological	1:50
β1	Rabbit	HPA005822	Sigma-Aldrich	1:100
β2	Rabbit	17844-1-AP	Proteintech	1:50
β3	Rabbit	APrEST84413	Novus Biological	1:100
β4	Mouse	NBP2-61742	Novus Biological	1:100
δ	Rabbit	HPA056404	Sigma-Aldrich	1:100
3	Rabbit	NBP1-79951	Novus Biological	1:100
γ	Rabbit	NBP1-79952	Novus Biological	1:100

Table S7. List of CHRN antibodies.

Table S8. List of recognition antigens of CHRN antibodies and their percentages of identity.

s.u.	Antigenic sequences	Position	Identity*
α1	MKLGTWTYDGSVVAINPESDQPDLSNFMESGEWVIKESRGWKHSVTYSCCPDTPYLDITYH F	189-250	α2/3/4/6
α2	EEAKRPPPRAPGDPLSSPSPTALPQGGSHTETEDRLFKHLFRGYNRWARPVPNTSDVVIVRFG LSIAQLIDVDEKNQMMTTNVWLKQEWSDYKLRWNPTDFGNITSLRVPSEMIWIPDIVLYNN ADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCKMKFGSWTYDKAKI DLEQMEQTVDLKDYWESGEWAIVNATGTYNSKKYDCCAEIYPDVTYAFVIRRL	27-264	<mark>α4</mark> α3/5/6 β3
α3	RTPTTHTMPSWVKTVFLNLLPRVMFMTRPTSNEGNAQKPRPLYGAELSNLNCFSRAESKGC KEGYPCQDGMCGYCHHRRIKISNFSANLTRSSSSESVDAVLSLSALSPEIKEAIQSVKYIAENM KAQNEAKEIQDDWKYVAM	331-473	α1/2/6 β2/4
α4	HVETRAHAEERLLKKLFSGYNKWSRPVANISDVVLVRFGLSIAQLIDVDEKNQMMTTNVW VKQEWHDYKLRWDPADYENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGR VQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTYDKAKIDLVNMHSRVDQLDFWESGE WVIVDAVGTYNTRKYECCAEIYPDITYAFVIRRL	29-242	α2 α3/5/6 β3
α5	AQRGLSEPSSIAKHEDSLLKDLFQDYERWVRPVEHLNDK	33-71	β3 α4
α6	KGCVGCATEERLFHKLFSHYNQFIRPVENVSDPVTVHFEVAITQLANVDEVNQIMETNLWL RHIWNDYKLRWDPMEYDGIETLRVPADKIWKPDIVLYNNAVGDFQVEGKTKALLKYNGMI TWTPPAIFKSSCPMDITFFPFDHQNCSLKFGSWTYDKAEIDLLIIGSKVDMNDFWENSEWEII DASGYKHDIKYNCCEEIYTDITYSFYIRRL	26-239	<mark>α3</mark> α2/4/5 β3
α7	LYKELVKNYNPLERPVANDSQPLTVYFSLSLLQIMDVDEKNQVLTTNIWLQMSWTDHYLQ WNVSEYPGVKTVRFPDGQIWKPDILLYNSADE	58-149	α2/3/4/10
α9	HFCGAEARPVPHWARVVILKYMSRVLFVYDVGESCLSPHHSRERDHLTKVYSKLPESNLKA ARNKDLSRKKDMNKRLKNDLGCQGKNPQEAESYCAQYKVLTRNIEYIAKCLKDHKATNS KGSEWKKVAKVIDRFFMWIFFIMVFVMTILIIARAD	324-479	α2/4/6/10
α10	AEGRLALKLFRDLFANYTSALRPVADTDQTLNVTLEVTLSQIIDMDERNQVLTLYLWIRQEW TDAYLRWDPNAYGGLDAIRIPSSLVWRPDIVLYNKADAQPPGSASTNVVLRHDGAVRWDA PAITRSSCRVDVAAFPFDAQHCGLTFGSWTHGGHQLDVRPRGAAASLADFVENVEWRVLG MPARRRVLTYGCCSEPYPDVTFTLLLRRRAA	25-237	α9 α3/7
β1	LSVVVLNLHHRSPHTHQMPLWVRQIFIHKLPLYLRLKRPKPERDLMPEPPHCSSPGSGWGR GTDEYFIRKPPSDFLFPKPNRFQPELSAPDLRRFIDGPNRAVALLPELREVVSSISYIARQLQEQ EDHDALKEDWQF	325-462	α3 β2/4
β2	LLRLCSGVWGTDTEERLVEHLLDPSRYNKLIRPATNGSELVTVQLMVSLAQLISVHEREQIMT TNVWLTQEWEDYRLTWKPEEFDNMKKVRLPSKHIWLPDVVLYNNADGMYEVSFYSNAVV SYDGSIFWLPPAIYKSACKIEVKHFPFDQQNCTMKFRSWTYDRTEIDLVLKSEVASLDDFTPS GEWDIVALPGRRNENPDDSTYVDITYD	16-227	β4 α2

β3	TGFNSIAENEDALLRHLFQGYQKWVRPVLHSNDTI		α5
			α2/4
β4	CRVANAEEKLMDDLLNKTRYNNLIRPATSSSQLISIKLQLSLAQLISVNEREQIMTTNVWLKQ		β2
	EWTDYRLTWNSSRYEGVNILRIPAKRIWLPDIVLYNNADGTYEVSVYTNLIVRSNGSVLWLP PAIYKSACKIEVKYFPFDQQNCTLKFRSWTYDHTEIDMVLMTPTASMDDFTPSGEWDIVALP		
			α3
	GRRTVNPQDPSYVDVTYDFIIKRKPLFYT		β3
δ	$\label{eq:linear} LVRRSSSLGYISKAEEYFLLKSRSDLMFEKQSERHGLARRLTTARRPPASSEQAQQELFNELKP$	274 464	67
	AVDGANFIVNHMRDQNNYNEEKDSWNR	374-404	βZ
ε	GLLGRGVGKNEELRLYHHLFNNYDPGSRPVREPEDTVTISLKVTLTNLIS	13-62	α6, γ
γ	NYDPNLRPAERDSDVVNVSLKLTLTNLISLNEREEALTTNVWIEMQWCDY		δ
			α7, β2/4

* Range of the percentage of identity obtained from blastp: <mark>yellow, 65-80%;</mark> light green, 50-65%; <mark>dark</mark> green, <50%.

ENIEC	ConPonk	Forward converse	Powerse coguer co	Amplicon
ENES	GeliDalik	Forward sequence	Reverse sequence	size (b)
CHRNA1	NM_001039523.2	5'- GTCCACACAAGCTCCGGTA-3'	5'- CAGACGGGTCTCATGTTCG-3'	104
CHRNA2	NM_000742.3	5'- CTGTGGTGGCTCCTTCTGA-3'	5'- GGGAGAGGAGAGTGGGTCTC-3'	87
CHRNA3	NM_000743.4	5'- TGAAATGGAACCCCTCTGAC-3'	5'- GAAATCCCCAACAGCATTGT-3'	107
CHRNA4	NM_000744.6	5'- GCCGGACATCGTCCTCTAC-3'	5'- TGCAGGAGCTCTTGTAAATGG-3'	125
CHRNA5	NM_000745.3	5′- GACAACAAACGTCTGGTTGAAA-3′	5'- ACAGAGTCTGAAGGAACACGTATAAC-3'	105
CHRNA6	NM_004198.3	5'- TTCATGGGGGCTTGTGTC-3'	5'- GAGCCTCTCCTCAGTTGCAC-3'	83
CHRNA7	NM_000746.5	5'- CAATGACTCGCAACCACTCA-3'	5'- GTGATCTGTCCAAGACATTTGC-3'	121
CHRNA9	NM_017581.3	5'-TCAGAAAATGTGCCCCTGAT-3'	5'- GGCCCCACAGAAGTGGATA-3'	108
CHRNA10	NM_020402.3	5'- CCCAGATCATCGACATGGA-3'	5'- CCCATCGTAGGTAGGCATCT-3'	90
CHRNB1	NM_000747.2	5'- CACAAAGGTGTACTTAGACCTGGA-3'	5'- TTCAGTAGCACCACGTCAGG-3'	129
CHRNB2	NM_000748.2	5'- CTGGCCCAGCTCATCAGT-3'	5'- TCCAGGTGAGGCGATAATCT-3'	94
CHRNB3	NM_000749.4	5'- GGTCCGCCCTGTATTACATTC-3'	5'- TCAGCTGATTCTTTTCATCCAC-3'	95
CHRNB4	NM_000750.4	5'- TGACGATGAAGACCAGAGTGTC-3'	5'- GGACGCACAAAACATGAAC-3'	95
CHRND	NM_000751.3	5'- GGGACCAGAACAATTACAATGAG-3'	5'- GCAGGAAGATCCAGGCTGT-3'	113
CHRNE	NM_000080.4	5'- CGACACAGAGGCCTATACTGAG-3'	5'- GCGGATGATGAGCGAGTAG-3'	93
CHRNG	NM_005199.4	5'- AGCAGAGTCACTTTGACAATGG-3'	5'- GTAGTGGGCCATGAGGAAGA-3'	131

Table S9. List of primers.

2. Supporting information Figures

Figure S1. Constraint-based Multiple Alignment of CHRN antibodies. COBALT alignment is shown for the 16 subunits and antigen sequences of corresponding antibodies are highlighted in grey. Red amino acids are conserved for all subunits.

α1	001	MEPWPL1LLFSLCSAGLVLGSEHETRLVAKLFKDYS	36
α2	001	MGPS-cpvflSFTKLSLwwllLTPAGG <mark>EEakr-ppprAPGdplsspsPTALPQggshte-<mark>tEDRLFKHLFRG</mark><mark>YN</mark></mark>	71
α3	001	MgsgplSLPLALSpprlLLLLLSLLPVARASEAEHRLFERLFED-YN	47
α4	001	MPlllllGTGLLRasshve-trahaEERLLKKLFSGYN	49
α5	001	MAAR-gsgpralRLLLLvQLVAGRCGLAGAAGGAQrgIsepsslakhEDSLLKDLFQDYE	59
α6 α7	001	MLTSKOGGITHGGLCLWLCVFTPFFKGVGCAT	40
~9	001	MRCSpggvwialaasiliig - naiaseescppwdpgiifegAsvReapipvsi- qgelgraireeivan- in	/ 3
α10	001		42
B1	001	MTPGALIMI.lgALGAPLAPG	39
β2	001	MARRcqpvalLLGFGL	43
β3	001	MLPDFMLvLIVLGIPSSATtgfnsiaenEDALLRHLFQGYQ	41
β4	001	MRRapslvLFFLVALCGRGNCRVANAEEKLMDDLLNKtrYN	41
Y	001	MHGGQGPLLLLLLLAVCLG <u>AQGRNQ</u> <u>EERLLADLMQ</u> N <mark>YD</mark>	38
ε	001	MARAPLGVLLL1ELRLYHHLFNNYD	36
δ	001	MEGPVLTLGLLAALAVCGSWGLNEEERLIRHLFQEkgYN	39
α1	0.37	SVVRPVEDHROVVEVTVGLOLIOLINVDEVNOIVTTNVRLKOadmud]proscyt]avp]fsh]aneOWVDYNLKWNPDD	116
α2	072	RWARPVPNTSDVVIVRFGLSIAQLIDVDEKNOMMTTNVWLKQEWSDYKLRWNPTD	126
α3	048	EIIRPVANVSDPVIIHFEVSMSQLVKVDEVNQIMETNLWLKQIWNDYKLKWNPSD	102
α4	050	KWSRPVANISDVVLVRFGLSIAQLIDVDEKNQMMTTNVWVKQEWHDYKLRWDPAD	104
α5	060	RWVRPVEHLNDKIKIKFGLAISQLVDVDEKNQLMTTNVWLKQEWIDVKLRWNPDD	114
α6	047	QFIRPVENVSDPVTVHFEVAITQLANVDEVNQIMETNLWLRHIWNDYKLRWDPME	101
α7	068	PLEREVANDSQPLTVYFSLSLLQIMDVDEKNQVLTNIWLQM	122
α9 ~10	044	NALKYVEDTDKVENVILQITESQIKDMDENQILTALWIKQ	98
81 81	043		94
B2	044	KLIEPATNGSELVTVOLMVSLAOLISVHEREOIMTTNVWLTO	98
β3	042	KWVRPVLHSNDTIKVYFGLKISQLVDVDEKNQLMTTNVWLKQEWTDHKLRWNPDD	96
β4	042	NLIRPATSSSQLISIKLQLSLAQLISVNEREQIMTTNVWLKQEWTDYRLTWNSSR	96
Y	039	PNLRPAERDSDVVNVSLKLTLTNLISLNEREEALTTNVWIEMOWCDYRLRWDPRD	93
ε	037	PGSRPVREPEDTVTISLKVTLTNLISLNEKEETLTTSVWIGIDWQDYRLNYSKDD	91
δ	040	KELRPVAHKEESVDVALALTLSNLISLKEVEETLTTNVWIEHGWTDNRLKWNAEE	94
α1	117	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLOYTGHITWTPPAIFKSYCEIIVTHFPFDEONCSMKLGTWTY	196
α1 α2	117 127	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPFAIYKSSCSIDVTFFPFDQQNCKMKFGSWTY	196 206
α1 α2 α3	117 127 103	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNAVGDFQVDDKTKALLKYTGEVTWIPPAIFKSSCKIDVTYFPFDYQNCTMKFGSWSY	196 206 182
α1 α2 α3 α4	117 127 103 105	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSIRVPSEMIWIPDIVLYNNADGBFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNAVGDFQVDDKTKALLKYTGEVTWIPPAIFKSSCKIDVTYFPFDYQNCTMKFGSWSY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY	196 206 182 184
α1 α2 α3 α4 α5	117 127 103 105 115	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSLRVPSEMIWIPDIVLYNNADGBFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNAVGDFQVDKTKALLKYTGEVTWIPPAIFKSSCKIDVTYFPFDYQNCTMKFGSWTY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGFFEGT-STKTVIRYNGTVTWTPPANYKSSCTIDVTFFPFDLQNCSMKFGSWTY	196 206 182 184 193
α1 α2 α3 α4 α5 α6	117 127 103 105 115 102	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFPDQONCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGFAVTHLTKAHLFSTGVWIPPAIYKSSCSIDVTFPFPDQONCKMKFGSWTY YENVTSIRISELIWRPDIVLYNNADGFAVTHLTKAHLFHDGRVOWTPPAIYKSSCSIDVTFPFPDQONCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGRFEGT-STKTVIRYNGTVTWTPPANYKSSCTIDVTFPFPDLQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGPQVECKTKALLKYNGMITWTPPANFKSSCPNDITFPFPDLQNCSKKFGSWTY	196 206 182 184 193 181
α1 α2 α3 α4 α5 α6 α7 α9	117 127 103 105 115 102 123	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWSY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCTIDVTFFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGFFEGT-STRTVIRYNGTVTWTPPANYKSSCTIDVTFFPFDQQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVEGKTKALLKYNGMITWTPPAIFKSSCYDVRWFPFDVQNCSLKFGSWTY YPGIPEIDEDLWZWRADDEFERDATFHTNVLVNSSGHCQYLPPGIFKSSCYIDVTFFPFDQQHCKLKFGSWSY	196 206 182 184 193 181 202
α1 α2 α3 α4 α5 α6 α7 α9 α10	117 127 103 105 115 102 123 99	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFQVDKTKALLKYTGEVTWIPPAIFKSSCKIDVTFPFDQQNCTMKFGSWSY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGFFEGT-STRTVIRYMGTVTWTPPANYKSSCTIDVTFFPFDQQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLFDNADGFQVECKTKALLKYNGMITWTPPAIFKSSCMDITFFPFDHQNCSKKFGSWTY YPGVKTVRFPDQQIWKPDILLYNSADERFDATFHTNVLVNSSGHCQYLPPGIFKSSCYIDVTFPFDQQCNLTKFGSWSY YDGLDSIRIPSDLVWRPDIVLYNNADGSSSTNUVURVDGLTWDAPAITKSSCVDVTYPFDQQCNLTFGSWTY	196 206 182 184 193 181 202 178
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1	117 127 103 105 115 102 123 99 98 95	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNAVGDFQVDDKTKALLKYTGEVTWIPPAIFKSSCKIDVTYPFDYQNCTMKFGSNSY YENVTSIRIPSELIWRPDIVLYNNAUGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGRFEGT-STKTVIRYNGVTWTPPANYKSSCTIDVTFFPFDQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNGMITWTPPAIFKSSCFMDITFFPFDHQNCSMKFGSWTY YPGVKTVRFPDGQIWKPDILLYNSADERFDATFHTNVLVNSSGHCQYLPPGIFKSSCYIDVRWFPFDVQHCKLKFGSWSY YDGLDSIRIPSDLVWRPDIVLYNKADDESSEPVNTNVVLRYDGLITWDAPAITKSSCVDVTYFPFDNQCNLTFGSWTY YGGLDAIRIPSSLVWRPDIVLYNNADQPPGSXTVVLRHDGAVRWDAPAITKSSCVDVTYFPFDNQCNLTFGSWTY	196 206 182 184 193 181 202 178 177
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2	117 127 103 105 115 102 123 99 98 95 99	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSLRVPSEMIWIPDIVLYNNADGDFAVTHMTKAHLFSTCTVHWVPPAIFKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNAVGDFQVDKTKALLKYTGEVTWIPPAIFKSSCSIDVTFFPFDQQNCTMKFGSWSY YGGIKVIRVPSDSVWTPDIVLFDNADGDFAVTHLTKAHLFHDCRVQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNGMITWTPPAIFKSSCPMDITFFPFDQNCTMKFGSWTY YDGUETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNGMITWTPPAIFKSSCPMDITFFPFDQNCSKKFGSWTY YDGUETLRVPADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIFKSSCPMDITFFPFDQQNCTMKFGSWTY YDGUETLRVPADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIFKSSCVIDVTFPFFDQQCKLKFGSWTY YDGUETLRVPADKIWKPDIVLYNKADDESSEPVNTVVVLRYDGLITWDAPAITKSSCVVDVTYPFFDQQCKLFGSWTY YGGLDAIRIPSSLVWRPDIVLYNKADAPFGSASTNVVLRHDCAVKWDAPAITRSSCRVDVAAPFFDQHCGLFGSWTH HDGIDSLRIFASSWLPDVVLLNNADGMFDVALDISVVVSXDGSVRWQPPGIYRSSCSUVYAPFFDQQNCTMKFSSYT	196 206 182 184 193 181 202 178 177 174
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2 β3	117 127 103 105 115 123 99 98 95 99 95 99	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGFAVTHITKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFPDQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGFAVTHITKAHLFHDGRVQWTPPAIYKSSCSIDVTFPFPDQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGPAVTHITKAHLFHDGRVQWTPPAIYKSSCTIDVTFPFPDQNCSKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGPAVCKTKALLKYNGMITWTPPAIFKSSCVHDTFPFPDQNCSKKFGSWTY YDGUSIRIPSDLVMRPDIVLYNNADGPAVEKTKALLKYNGMITWTPPAIFKSSCVHDVFFPFDQNCSKKFGSWTY YDGUSIRIPSDLVMRPDIVLYNNADGPAVEKTKALLKYNGMITWTPPAIFKSSCVHDVTFPFPDQNCSKKFGSWTY YDGUSIRIPSDLVMRPDIVLYNKADDESSEPVNTVVVLRYDGLITWDPAITKSSCVDVTYPFPDQQCNLTFGSWTY YGGLAIRIPSSLVWRPDIVLYNKADAGPFGSASTNVVLRHDGAVRWDAPAITRSSCRVDVAAPPFDAQHCGLTFGSWTH HDGIDSLRITAESVWLPDVVLLNNNDGMFDVALDISVVVSSDGSVRWQPPGIYRSSCSIQVTYFPFDQQNCTMVFSSYSY FDNMKKVRLPSKHIWLPDVVLYNNADGMYEVSFYSNAVVSYDGSIFWLPPAIYKSACKIEVKHFPFDQQNCTMKFRSWTY	196 206 182 184 193 181 202 178 177 174 178 176
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2 β3 β4	117 127 103 105 115 123 99 98 95 99 95 99 97 97	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCSIDVTFPFDQQNCTMKFGSWSY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCTIDVTFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGPFEGT-STKTVIRINGTVTWTPANYKSSCTIDVTFPFDDQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNGMITWTPANFKSSCTUDVTFPFDHQNCSKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNGMITWTPANFKSSCTUDVTFPFDHQNCSKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGFQVECKTKALLKYNGMITWTPANFKSSCTUDVTFPFDHQNCSKKFGSWTY YDGLDSIRIPSDLVWRPDIVLYNNADGFQVECKTKALLKYNGMITWTPAIFKSSCVDVTYPFDHQNCSKKFGSWTY YDGLDSIRIPSDLVWRPDIVLYNNADGFQVECKTKALLKYNGMITWTPAIFKSSCVDVTYPFFDNQCNLFGSWTY YDGLDSIRIPSDLVWRPDIVLYNNADGFQVECKTKALLKYNGMITWTPAIFKSSCVDVTYPFFDNQCNTFFSF YDGLDSIRIPSDLVWRPDIVLYNNADGSSEPVNTVVLRHDGAVRWDAPAITKSSCVDVTYPFFDNQCNTFFSSYSY FDNMKKVRLPSKHIMLPDVVLYNNADGMFUSFYSNAVVSSDGSIFWLPFAIYKSSCKIDVTFPFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLFENADGRFEGSLMTKVIVKSNGVVWTPPASYKSSCTMDVTFPFFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLFNADGFFGSLMTKVIVKSNGVWTPPASYKSSCTMDVTFFPFDQNCCTKKFRSWTY YGGIHSIKVPSESLWLPDIVLFNADGFFGSLMTKVIVKSNGVUWTPPASYKSSCTMDVTFFPFDQNCTKKFRSWTY	196 206 182 184 193 181 202 178 177 174 178 176 176
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2 β3 β4 Υ	117 127 103 105 115 102 123 99 98 95 99 97 97 97 94	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGFAVTHMTKAHLFSTGTVHWVPAIYKSSCSIDVTFFPFDQQNCKMKFGSWTY YGGAFFMRVPAQKIWKPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWSY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIYKSSCTIDVTFFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGFFEGT-STRTVIRYNGTVTWTPPAYKSSCTIDVTFFPFDQQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVEGKTKALLKYNGMITWTPPAIFKSSCPMDITFFPFDQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGDFQVEGKTKALLKYNGMITWTPPAIFKSSCPMDITFFPFDQQCCLKFGSWTY YDGUETLRVPADKIWKPDIVLYNNADGFQVEGKTKALLKYNGMITWTPPAIFKSSCYDVWTPFPDVQCCLKFGSWSY YDGLDSIRIPSDLVWRPDIVLYNNADGFQVEGKTKALLKYNGMITWTPPAIFKSSCYDVTYFPFDQQCNLTFGSWTY HGGDAIRIPSSLVWRPDIVLYNKADADFSEPVNTVVLRYDGLITWDAPAITKSSCVDVVYFPFDNQCCLTFGSWTY HDGIDSLRITAESVWLPDVVLLNNNDGNFDVALDISVVVSDGSVRWQPPGIYRSSCSIQVTYFPFDQQCTMVFSSYSY FDNMKKVRLPSKHINLPDVVLYNNADGYFEGSLMTKVIKSNGTVWTPPAYKSACKIEVKHFPFDQQNCTMKFRSWTY YGGUHSIKVPSESLWLPDIVLFNNADGFFEGSLMTKVIKSNGTVWLPPAYKSACKIEVKHFPFDQNCTMKFRSWTY YGGUNLRIPAKTWLPDIVLFNNADGFFEGSLMTKVIKSNGTVWLPPAIFKSACKIEVKFPFDQNCTMKFRSWTY YGGUNLRIPAKTWPPDIVLFNNADGFFEGSLMTKVIKSNGTVWLPPAIFRSACSISVTYFPFDWQNCTMKFRSWTY YEGLWVLRVPSTWWRPDIVLENNADGYFEVSYYNIVURSNGSVLWPPAIFRSACSISVTYFPFDWQNCTMKFRSWTY	196 206 182 184 193 181 202 178 177 174 178 176 176 173
α1 α2 α4 α5 α6 α7 α10 β1 β2 β3 β4 Υε	117 127 103 105 115 102 123 99 98 95 99 97 97 97 97 94 92	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIFKSSCSIDVTFFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFQVDKTKALLKYTGEVTWIPPAIFKSSCSIDVTFFPFDQQNCTMKFGSWSY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIFKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVMTPDIVLFDNADGFFEGT-STKTVIRYNGTVTWTPPANYKSSCTIDVTFFPFDQQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLFDNADGFFEGT-STKTVIRYNGTVTPPAIFKSSCYDDVTFPFDQQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNGMITWTPPAIFKSSCYDDVTFPFDQQNCTMKFGSWTY YDGUSIRIPSDLVWRPDIVLYNNADGFPVERDTHTNVLVNSSGHCQYLPGIFKSSCYDVTYFPFDQQCKLKFGSWSY YDGLDSIRIPSDLVWRPDIVLYNKADAQFFGSXTVVLRHDGAVRWDAPAITKSSCVVDVTYFPFDQQCCTKFGSWTY YGGLDAIRIPSSLVWRPDIVLYNKADAQPFGSASTNVVLRHDGAVRWDAPAITKSSCRVDVAAFPFDQHCGLTFGSWT HDGIDSLRITAESVMLPDVVLLNNDGNFDVALDISVVVSDGSVRWQPFGIYRSSCSTQVTYFPFDQQNCTMKFRSWTY YGGUHSIKVPSSLSUPDUVLFNNADGMYEVSFYSNAVVSYDGSIFWLPAIYKSACKIEVKHPPFDQQNCTMKFRSWTY YGGUHSIKVPSSLWRPDIVLFNNADGFFGSLMTKVIVKSNGVVWTPPASYKSSCTMDVTFPFDQQNCTMKFRSWTY YGGUHSIKVPSSLWPPDIVLENNDGFFGSLMTKVIVSPDGCIWMLPPAIYKSACKIEVKHPPFDQQNCTLKFRSWTY YEGVNILRIPAKRIWLPDIVLYNNADGFYEVSYTNLIVRSNGSVWLPAIFNFFFDQNCSLIFFSQTY YEGUVLRVPSTMWRPDIVLENNDGFFEAJLYNUVLVSPDGCIWMTPPAIFKSACSISVTYFPFDQNCSLKFRSWTY YEGUVILRPSKTWWRPDIVLENNDGFFEAJLYNUVLVSPDGCIWMLPPAIFKSACSISVTYFPFDQNCSLIFFSQTY	196 206 182 184 193 181 202 178 177 174 178 176 176 173 171
α1 α3 α4 α5 α6 α7 α9 α10 β1 β3 β4 Υε δ	117 127 103 105 115 102 123 99 98 95 99 97 97 97 94 92 95	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFAVTHLTKAHLFHDGRVOWTPPAIYKSSCSIDVTFPFDQQNCTMKFGSWSY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVOWTPPAIYKSSCTIDVTFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGPFEGT-STKTVIRINGTVWTPPAYKSSCTIDVTFPFDQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNGMITWTPPAIFKSSCMDDITFPFDHQNCSKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGEPQVECKTKALLKYNGMITWTPANFKSSCTIDVTFPFDHQNCSKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGEPQVECKTKALLKYNGMITWTPAIFKSSCMDUTFFPFDHQNCSKKFGSWTY YDGLDSIRIPSDLVWRPDIVLYNNADGEPQASTNVVLRYDGLITWDAPAIFKSSCVDVYYPFFDNQQCNLTFGSWTY YGGLDSIRIPSDLVWRPDIVLYNNADGPGASTNVVLRHDGAVRWDAPAITKSSCRUDVAPPFDQQCNLTFGSWTY YGGLDSIRIPSSLWRPDIVLYNNADGNFDVALDISVVVSSDGSVRWQPPGIYRSSCSIQVTYPFFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDVVLLNNADGNFDVALDISVVVSSDGSITWLPPAIYKSSCKIDVTFPFFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLFNADGRFEGSLMTKVIVKSNGTVWTPPASYKSSCTMDVTFPFPDQNCCMKFGSWTY YGGIHSIKVPSESLWLPDIVLFNADGFFEGSLMTKVIVSNGSIWLPAIYKSSCKIDVTFPFFDQNCSKKFGSWTY YGGIHSIKVPSESLWLPDIVLFENADGRFEGSLMTKVIVSNGSVLWLPAIYKSSCKIEVKHPFFDQNCTMKFRSWTY YGGIETLRVPSELWNLPDIVLFENADGRFEGSLMTKVIVSNGVVWTPPASYKSSCTMDVFFPFDRQNCSKFGSWTY YGGIETLRVPSELWLPDIVLFENADGRFEGSLMTKVIVSNGVWTPPASYKSSCTMDVFFPFDQNCCTKKFRSWTY YGGIETLRVPSELWNLPDIVLFENADGRFEGSLMTKVIVSSDGSIWLPAIYSSCKIEVKTYPFDQNCSLIFFSQTY FGNISVLRVPSELVWLPEIVLENNDGSFQISYCNUVSPDGCIYWLPAIFRSACSISVTYPFFDWQNCSLIFFSQTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSACSISVTYFPFDWQNCSLIFFSQTY	196 206 182 184 193 181 202 178 177 174 178 176 173 171 174
α1 α2 α3 α4 α5 α7 α9 α10 β1 β2 β3 β4 Υ ε δ	117 127 103 105 102 123 99 98 95 99 97 97 97 97 97 92 95	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSIRVESEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGFPAVTHITKAHLFSTGTVHWVPAIYKSSCSIDVTFPFPDQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFNADGPFAVTHITKAHLFSTGTVWIPPAIYKSSCSIDVTFPFPDQNCTMKFGSWTY YDGIETIRVEADKIWKPDIVLYNNADGPAVTHITKAHLFSTGTVHVPPAIFKSSCKIDVTFPFPDQNCSUKFGSWTY YDGIETIRVEADKIWKPDIVLYNNADGFAVTHITKAHLFSTGTVHWPPAIFKSSCVIDVTFPFPDQNCSUKFGSWTY YDGUETIRVEADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIFKSSCVIDVTFPFPDQNCSUKFGSWTY YDGUDSIFSDLWWRPDIVLYNNADGPFQSASTNVVLRYDGLITWDPAIFKSSCVDVTFPFPDQNCSUKFGSWTY YGGLDAIRIPSDLWRPDIVLYNKADDESSEPVNTNVVLRYDGLITWDAPAITKSSCVDVAAPPFDQACULTFGSWTH HDGIDSLRIFAESVWLPDVVLLNNADGNFDVALDISVVVSDGSVRWQPPGIYRSSCSIQVTFPFDQNCCTWFFSSYS FDNMKKVRLPSKIWLPDVVLLNNADGMFDVALDISVVVSDGSVRWQPPGIYRSSCSIQVTFPFDQNCTMKFRSWTY YGGIHSIKVPSESLMLPDUVLFENADGRFEGSIMTKVIVKSNGTVWTPPAYKSACKIEVKHPPFDQNCTMKFRSWTY YGGUNILRIPAKRIWLPDIVLFENADGFEGSIMTKVIVLSNGTVWTPPAYKSACKIEVKYPPFDQNCSLKFGSWTY YEGVNILRIPAKRIWLPDIVLFENADGFEGSUMTKVIVKSNGTVWTPPAYRKSCTMDVTFPFDQNCSLIFGSQTY FGGISTLVPSELWRPDIVLENNNDGSFQISYSCVILVYHYGGVYWLPPAIFRSACSISVTYPFFDQNCSLIFRSQTY FGGISVLRVPSESLMLPDIVLENNNDGSFQISYSCVILVYHYGGVYWLPPAIFRSACSISVTYFPFDQNCSLIFFSQTY FGGISVLRPPDMVWLPEIVLENNNDGSFQISYSCVILVYHYGGVYWLPPAIFRSACSISVTYFPFDWQNCSLKFSSLKY	1966 2066 1822 1844 1933 1811 2022 1788 1777 1744 1776 1776 1773 1771 1774 261
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2 β3 β4 Υ ε δ α2	117 127 103 105 112 123 99 98 95 99 97 97 97 97 97 94 92 95	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVFAQKIWKPDIVLYNNADGFAVTHITKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFPDQNCKMKFGSWTY YENVTSIIPSELIWPDIVLYNNADGFAVTHITKAHLFHDGRVOWTPAIYKSSCSIDVTFPFDQQCCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGRFEGT-STKTVIRYNGTVTWTPPAIFKSSCKIDVTFPFPDQNCSMKFGSWTY YDGUETLRVFADKIWKPDIVLYNNAUGPGVECKTKALLKYNGMITWTPPAIFKSSCPNDITFFPFDQNCSLKFGSWTY YDGUSIFISSLUWRPDIVLYNNADGPFQAEKKALLKYNGMITWTPPAIFKSSCVDVTFPFPDQNCSLKFGSWTY YDGUDSIFISSLUWRPDIVLYNNADGSFEVNTNVVLRYDGLITMDAPAITKSSCVDVTFPFDQQCNLTFGSWTY YGGLAIRIPSSLVWRPDIVLYNKADDSSEPVNTNVVLRYDGLITMDAPAITKSSCVDVAAPPFDAQCNLTFGSWTY YGGLAIRIPSSLWRPDIVLYNNADGNFDVALDISVVVSDGSVRWQPFGIYRSSCSIQVTYPFPDQQCCTMFFSSVY FDNMKKVRLPSKHIWLPDVVLYNNADGMYEVSFYSNAVVSYDGSIFWLPPAIYKSACKIEVKHPFPDQQNCTMKFRSWTY YGGUNILRIPAKRIWLPDIVLYNNADGYEVSYYTNLIVRSNGVVWTPPASYKSSCTMDVTFPFDQQNCTMKFRSWTY YGGUNILRIPAKRIWLPDIVLFENADGRFEGSLMTKVIVKSNGTVWTPPASYKSSCTMDVTFPFDQQNCTMKFRSWTY YGGUNILRIPAKRIWLPDIVLFENADGFYEGSLMTKVIVKSNGTVWTPPASYKSSCTMDVTFPFDQQNCTLKFRSWTY YGGUNILRIPAKRIWLPDIVLENNDGGFQAYDANVLVYHGGVYWLPPAIFRSACSISVTYPFPDQQNCTLKFRSWTY YGGUSVRLPPSTVWRPDIVLENNDGGFQISYSCNVLVYHYGFVYWLPPAIFRSACSISVTYPFPDQQNCSLIFRSQTY FGNISVLRLPPDMVWLPEIVLENNDGSFQISYSCNVLVYHYGFVYWLPPAIFRSACSISVTYPPFDWQNCSLIFRSQTY FGNISVLRLPPDMVWLPEIVLENNDGSFQISYSCNVLVYHYGFVYWLPPAIFRSACSISVTYPFPDWQNCSLIFRSQTY FGNISVLRLPPDMVWLPEIVLENNDGSFQISYSCNVLVYHYGFVYWLPPAIFRSCPISVTYFPFDWQNCSLFFSLKY	1966 2066 182 184 193 181 202 178 177 174 178 176 173 171 174 2261 270
α1 α2 α3 α4 α5 α6 α7 α10 β1 β2 β3 β4 Υε δ α1 α2 α3	117 127 103 105 123 99 95 97 97 97 97 97 97 97 97 97 97 97 97 97	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFPDQONCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFAVTHLTKAHLFHDGRVOWTPPAIYKSSCSIDVTFPFPDQONCTMKFGSWTY YENVTSIRIPSELIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVOWTPPAIYKSSCTIDVTFPFPDQONCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGDFAVTHLTKAHLFHDGRVOWTPPAIYKSSCTIDVTFPFPDQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNCMITWTPPAIFKSSCPUDITFPFPDQNCSKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVECKTKALLKYNCMITWTPPAIFKSSCPUDVRFPFDQONCTKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGPQVECKTKALLKYNCMITWTPPAIFKSSCPUDVRFPFDQNCSKKFGSWTY YDGUDSIRIPSDLVWRPDIVLYNNADGPQASTNVVLRYDGITWDPAIFKSSCVUDVTYPFPDQQCNLTFGSWTY YGGUDSIRIPSDLVWRPDIVLYNNADGPGASTNVVLRYDGITWDPAIFKSSCVUDVTYPFFDQQCNTFGSWTY YGGUDSIRIPSSLVWRPDIVLYNNADGNFDVALDISVVVSDGSIFWLPPAIYKSSCKIDVTFPFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDVVLINNADGNFDVALDISVVVSDGSIFWLPPAIYKSACKIEVKHPFFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLFENADGRFEGSLMTKVIVKSNGVVWTPPASYKSSCTMDVTFPFPDQNCTMKFRSWTY YGGIETLRVPSELWNLPDIVLFENADGRFEGSLMTKVIVKSNGVVWTPPASYKSSCTMDVFFPFDQNCTKKFRSWTY YGGIETLRVPSELWLPDIVLFENADGRFEGSLMTKVIVKSNGVWTPPASYKSSCTMDVFFPFDQNCTKKFRSWTY YGGIETLRVPSELWNLPDIVLENNDGYFEVALYCNVLVSPDGCIVWLPPAIFRSACSISVTYPFDQNCNSLIFQSQTY FGNISVLRUPSTMVWRPDIVLENNDGSFQISYSCNVLVYNDFPASFXSSCFNDVTFPFDQNCSLIFQSQTY FGNISVLRUPSELWNLPEIVLENNDGSFQISYSCNVLVYNVPAFFSCPISVTYFPFDWQNCSLIFQSQTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPPAIFRSSCPISVTYFPFDWQNCSLFFSSLKY DSSVVAINPESDQFKSVTYSCCPDTPYLDITYHFVMQRLPLYFIV DKAKIDLEQMEQTV	1966 2066 182 1844 1933 1811 2022 1788 1777 1744 1788 1766 1733 1711 1744 2661 2700 2466
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2 β3 β4 Υ ε δ α1 α2 α3 α4	117 127 103 105 123 99 97 97 97 97 97 97 94 92 95 197 207 207 183 185	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVBSEMIWIPDIVLYNNAUGDFAVTHMTKAHLFSTGTVHWVPPAIFKSSCSIDVTFPFPDQQNCTMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNAUGDFQVDDKTKALLKYTGVTWIPPAIFKSSCSIDVTFPFPDQQNCTMKFGSWTY YGGIETLRVEADKIWRPDIVLYNNAUGDFQVEATKALLKYTGVTWIPPAIFKSSCSIDVTFPFPDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGPFAVTHLTKAHLFHOGRVQWTPPAIYKSSCSIDVTFPFPDQQNCTMKFGSWTY YDGIETLRVEADKIWKPDIVLYNNAUGDFQVEATKALLKYNGMITWTPPAIFKSSCPNDIFFPFDQNCSLKFGSWTY YDGUSTRFPDQJWKPDIVLYNNAUGDFQVEAKTKALLKYNGMITWTPPAIFKSSCPNDIFFPFDQNCSLKFGSWTY YDGUSIRFPDQJWKPDIVLYNNAUGDFQVEAKTKALLKYNGMITWTPPAIFKSSCPNDIFFPFDQNCSLKFGSWSY YDGUDSIRFPSDVWRPDIVLYNNADGDFQVEATTHTNVLNYSGHCQYLPGIFKSSCYDVATPFPDQNCCLKFGSWSY YGGUDSIRFPSDVWRPDIVLYNNADGPGSASTNVVLRHDGAVRWDAPAITRSSCRVDVATPFPDQNCTLKFGSWTH HDGIDSLRTFASSVWLPDVVLNNNDGNFDVALDISVVSSDGSVRWQPPGIYRSSCSIQVTYPFPDWQNCTMFFSSYSY YGGUHSIKVPSESLWLPDIVLYNNADGMFEVSFYSNAVSYDGSIFWLPFAIYKSACKIEVKHPPFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLYNNADGMFEVSFYSNAVVSYDGSIFWLPAIFRSSCTMDVTFPFPDRQNCSKKFGSWTY YEGUVNILRIPAKRTWLPDIVLYNNADGMFEVSFYSNAVVSYDGSIFWLPAIFKSSCSISVTYFPFDQQNCTKKFRSWTY YGGIHSIKVPSESLWLPDIVLYNNADGMFEVSFYSNAVVSYDGSIFWLPAIFKSACKIEVKHPPFDQQNCTKKFRSWTY YGGIHSIKVPSESLWLPDIVLYNNADGMFEVSFYSNAVVSYDGSIFWLPAIFKSACSISVTYFPFDWQNCSLFFSSLFY FGNISVLRLPPDMWRPDIVLENNUDGFFUALVCVVVSPDCIVWFPAIFKSACSISVTYFPFDWQNCSLFFSSLFY FGNISVLRLPPDMWRPDIVLENNUDGFGVAYDANVLVYEGGSVTWLPAIFKSACSISVTYFPFDWQNCSLFFSSLFY FGNISVLRLPPDMWRPDIVLENNUDGSFQISYSCNVLVHYEGFVYWLPAIFRSSCPISVTYFPFDWQNCSLFFSSLFY FGNISVLRLPPDMWRPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSSCPISVTYFPFDWQNCSLFFSSLFY FGNISVLRLPPDMWRPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSSCPISVTYFPFDWQNCSLFFSSLFY DKAKIDLVLIGSSW	1966 2066 182 184 193 181 202 178 177 174 176 176 173 171 174 261 270 246 248
α1 α2 α3 α5 α6 α7 α10 β1 β3 β4 Υε δ α12 α3 α4 5	117 127 103 105 129 99 98 95 99 97 97 97 97 97 92 95 197 207 183 194	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPAIFKSYCEIIVTHFPFDQONCSMKLGTWTY FCNITSIRVPSEMIWIPDIVLYNNADGDFAVTHMTKAHLFSTCTVHWVPAIYKSSCSIDVTFFPFDQONCTMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFAVTHITKAHLFSTCTVHWVPAIYKSSCSIDVTFPFPDQONCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLYNNADGDFAVTHITKAHLFHORVQWTPAIYKSSCSIDVTFPFPDQONCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGDFAVTHITKAHLFHORVQWTPAIYKSSCTIDVTFPFPDQONCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGDFQVECKTKALLKYNGMITWTPPAIYKSSCTIDVTFPFPDQONCTMKFGSWTY YDGUETLRVPADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIYKSSCTUDVFFPFDQONCTMKFGSWTY YDGUETLRVPADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIFKSSCVNDVFFPFDQONCTMKFGSWTY YDGUETLRVPADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIYKSSCVIDVTWPFPDQONCTMFGSWTY YGGLDAIRIPSDLVWRPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIFKSSCVDVAAPFFDQONCTMFGSWTY YGGLDAIRIPSDLVWRPDIVLYNNADGPFQSASTNVVLRHDCAVKWDAPAITRSSCRUDVAAPFFDQONCTMFFSSYT YGGLDAIRIPSSLWRPDIVLYNNADGWFGVSJYSNGSSCWUPPAIYRSSCXUVYFPFDWQNCTMFFSSYTY YGGIHSIKVPSESLWLPDIVLYNNADGWFGVSYYNNLVRNGGVUWTPASYKSSCTMDVTFPFDQONCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLENNDGFFQSLMTKVIVKSNGTVVWTPASYKSSCTMDVTFPFDQQNCTMKFRSWTY YEGUWILRIPAKRIMLPDIVLYNNADGYFGSYSYNNLVSNGSVLWLPPAIYKSACKIEVKHYFPFDQQNCTLKFRSWTY YEGUWLRUPSTWWRPDIVLENNUDGFFQSLMTVVVSPDGCIYWLPAIFRSACSISVTYFPFDWQNCSLKFSSTY FGNISVLRLPPDMVWLPEIVLENNIDGGFGVAYDANLVYEGGVVWLPPAIFRSACSISVTYFPFDWQNCSLKFSSLKY DGSVVAINPESDQF	1966 2066 1822 1844 1933 181 1772 1744 1786 1776 1737 1741 1744 2611 2700 2466 2488 2555
α1 α2 α3 α5 α6 α7 α10 β1 β2 β3 β4 Υε δ α2 α3 α4 5 α5 α6 α7 α3 α4 α5 α3 α4 α5 α3 α4 α5 α3 α4 α5 α6 α5 α6 α7 α2 α3 α2 α5 α4 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5	117 127 103 105 123 99 97 97 97 97 97 97 94 92 95 197 207 183 185 194 182	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSLRVESEMIWIPDIVLYNNADGFAVTHMTKAHLFSTGTVHWVPAIYKSSCSIDVTFPFDQQNCTMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGFQVDKTKALLKYTGEVTWIPPAIYKSSCSIDVTFPFPDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFNADGPFAVTHITKAHLFTGGTVQWTPAIYKSSCSIDVTFPFPDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGFAVTHLTKAHLFTGGTVQWTPAIYKSSCTIDVTFPFPDQQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIYKSSCTIDVTFPFPDQNCSLKFGSWTY YDGUETIRVPADKIWKPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIYKSSCTUDVTFPFPDQNCSLKFGSWTY YDGLDSIRIPSDLWWRPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIYKSSCTUDVTFPFDQQNCTMKFGSWTY YGGLDAIRIPSSLVWRPDIVLYNNADGPFQXECKTKALLKYNGMITWTPPAIYKSSCTUDVTFPFDQQNCTMKFGSWTY YGGLDAIRIPSSLVWRPDIVLYNNADGPFQASTNVVLRHDGAVRWDAPAITRSSCVDVAAPPFDQQCNLTFGSWTH HDGIDSLRITAESVWLPDIVLYNNADGMFDVALDISVVVSDGSVRWQPFGIYRSSCSIQVTYPPFDQQNCTMVFSSYSY FDNMKKVRLPSKHWLPDIVLYNNADGMFDVALDISVVVSDGSVRWQPFGIYRSSCSJQVTFPFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLFENADGRFEGSLMTKVIVKSNGTVWTPPASYKSSCTMDVTFPFDQQNCTMKFRSWTY YEGVNILRIPAKRIWLPDIVLYNNADGMFEVSYYNLIVRSNGSVLWLPAIYKSACKIEVKYPPFDQQNCTLKFRSWTY YEGVNILRIPAKRIWLPDIVLENNUDGFEVSYYNLIVRSNGSVLWLPAIYRSACKIEVKYPFPDQNCSLIFRSQTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSACSISVTYPPFDWQNCSLLFRSQTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSACSISVTYPPFDWQNCSLLFRSQTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSACSISVTYPPFDWQNCSLLFRSJTY DKAKIDLVGSSM	1966 2066 182 184 193 181 202 178 177 174 178 176 176 173 171 174 261 270 246 248 255 2455
α1 α2 α3 α5 α6 α7 α10 β1 β2 β4 Υε δ α2 α3 45 α6 7 9 α4 5 α3 45 α6 7 9	117 127 103 105 123 99 98 95 97 97 94 92 95 197 207 183 185 194 182 203	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGFAVTHITKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFNADGFAVTHITKAHLFHDGRVQWTPAIYKSSCSIDVTFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGRFEGT-STKTVIRYNGTVTWTPPAIFKSSCKIDVTFPFDQQNCTMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNADGPQVECKTKALLKYNGMITWTPPAIFKSSCPNDITFFPFDQNCSLKFGSWTY YDGUSIRFSDLWRPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPAIFKSSCVDVTFPFDQQNCTMKFGSWTY YDGUSIRFSDLWRPDIVLYNNADGPFQAECKTKALLKYNGMITWTPPAIFKSSCVDVTFPFDDQOCNLTFGSWTY YGGLAIRIPSSLVWRPDIVLYNNADGPFQSASTNVVLRHDGAVRWDAPAITRSSCVDVAAPPFDQQCNLTFGSWTY YGGLAIRIPSSLVWRPDIVLYNNADGNFDVALDISVVVSSDGSVRWQPPGIYRSSCSIQVTFPFDQQNCTMKFSSYS FDNMKKVRLPSKHWLPDVVLYNNADGNFDVALDISVVVSDGSVRWQPFGIYRSSCSTQVTYFPFDQQNCTMKFSSYY YGGIHSIKVPSESLWRPDIVLYNNADGNFEGSLMTKVIVKSNGTVWTPPASYKSSCTMDVTFPFDQQNCTMKFSSYY FGMIKKVRLPSKIWLPDIVLFENADGRFEGSLMTKVIVKSNGTVWTPPASYRSSCTMDVTFPFDQQNCTLKFRSWTY YEGUNILRIPAKRIWLPDIVLENNDGGFQISYSCNVLVYHVGFVYWLPPAIYRSACKIEVKYPPFDQQNCTLKFRSWTY YEGUNILRIPAKRIWLPDIVLENNDGSFQISYSCNVLVYHYGFVWLPPAIFRSACSISVTYPFFDQQNCSLFFSSLKY FGNISVLRLPPDMWWLPEIVLENNDGSFQISYSCNVLVYHYGFVWLPPAIFRSACSISVTYPFFDQQNCSLFFSSLKY DSSVVAINPESDQPDLSNFMESGEWVIKESRGWKHSVTYSCCPDTpVLDITYHFVMQRLPLYFIV DKAKIDLQMEQTVDLSNFMESGEWVIKDAVGTYNTKKYDCCAEI-YPDITYAFVIRRLPLFYTI DKAKIDLVMHSRV	1966 2066 182 184 193 181 202 178 177 174 178 176 176 173 171 174 261 270 246 248 255 245 245 245 245
α1 α2 α3 α4 α5 α7 α10 β1 β2 β4 Υεδ α12 α3 α4 5 α7 9 α10 β1 2 3 β4 Υεδ α3 α4 5 α6 7 9 α3 α4 5 α6 7 9 α10 β1 8 2 3 α4 5 α3 α2 α3 α2 α3 α2 α3 α3 α3 α3 α3 α3 α3 α3 α3 α3 α3 α3 α3	117 127 103 105 123 99 95 99 97 94 95 97 97 94 95 197 207 183 185 194 203 179	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FGNITSLRVPSEMIWIPDIVLYNNADGEFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCKMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGFAVTHMTKAHLFSTGTVHWVPPAIYKSSCSIDVTFPFDQQNCTMKFGSWTY YENVTSIRIPSELIWRPDIVLYNNADGFAVTHMTKAHLFFTGEVTWIPPAIYKSSCSIDVTFPFDQQNCTMKFGSWTY YGGIKVIRVPSDSVWTPDIVLFDNADGFEGT-STKTVIRYNGTVTTPANYKSSCTIDVTFFPFDQNCSMKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGPQVECKTKALLKYNCMITWTPPAIFKSSCVMDUTFFPFDHQNCSKKFGSWTY YDGIETLRVPADKIWKPDIVLYNNAUGPQVECKTKALLKYNCMITWTPPAIFKSSCVMDUTFFPFDHQNCSKKFGSWTY YDGUDIRIPSDLVWRPDIVLYNNADGFQVECKTKALLKYNCMITWTPPAIFKSSCVMDVTFPFDHQNCSKKFGSWTY YDGUDIRIPSDLVWRPDIVLYNNADGPQVECKTKALLKYNCMITWDPAIFKSSCVMDVTFPFDHQNCSKKFGSWTY YDGUDIRIPSDLVWRPDIVLYNNADGFQVECKTKALLKYNCMITWDPAIFKSSCVMDVTFPFDNQCNLTFGSWTY YDGUDIRIPSDLVWRDDIVLYNNADGFQVECKTKALLKYNCMITWDPAIFKSSCVMDVTPFFDNQCCNLTFGSWTY YDGUDIRIPSDLVWRPDIVLYNNADGFQVECKTKALLKYNCWIRVDAPAITRSSCRUDVAAPPFDQQCNLTFGSWTY YGGUDIRIPSDLVWRDDVLYNNADGNFDVALDISVVVSDGSIFWLPPAIYKSACKIEVKPPFDQQNCTMKFSSYSY FDNMKKVRLPSKHIWLPDVVLYNNADGYFQSIYSNAVVSYDGSIFWLPPAIYKSACKIEVKPPFDQQNCTMKFGSWTY YEGUNILRIPAKRIWLPDIVLYNNADGYFQSIYYNLIVKSNGTVVWTPPASYKSSCTMDVTFPFDRQNCSKLFGSWTY YEGUNILRIPAKRIWLPDIVLENNUDGYFQUAYDANVLVYEGGSVTWLPPAIYKSACKIEVKYPPFDQQNCSLFFSSLKY FGNISVLRLPPDMWRPDIVLENNDGSFQISYSCNVLVYHYGFYWLPPAIFRSSCPISVTYFPFDWQNCSLIFQSQTY FGNISVLRLPPDMWLPEIVLENNNDGSFQISYSCNVLVYHYGFYWLPPAIFRSCPISVTYFPFDWQNCSLFFSSLKY DSSVVAINPESDQF	1966 2066 182 184 1933 181 1777 174 178 1766 1733 171 174 270 2462 2455 264 255 264 242 245
α1 α2 α3 α4 α5 α6 α7 α10 β1 β2 β3 β Υ ε δ α1 α2 α4 α5 α4 Σ α4 α5 α7 9 α1 α2 α3 α4 5 α6 α7 9 α10 β1 ε 2 α3 α4 α5 α6 α7 α2 α3 α6 α5 α6 α7 α6 α5 α6 α7 α2 α3 α6 α5 α6 α7 α6 α5 α6 α7 α10 α5 α6 α7 α10 α10 α10 α10 α10 α10 α10 α10 α10 α10	117 127 103 115 102 123 99 98 95 97 97 97 97 97 97 97 97 97 97 97 97 97	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSIRVESEMIWIPDIVLYNNADGDFAVTHMTKAHLFSTGTVHWVPPAIFKSYCSIDVTFPFPDQQNCTMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNAVGDFQVDKTKALLKYTGVTWIPPAIFKSSCSIDVTFPPFDQQNCTMKFGSWTY YGGIETIRVEADKIWRPDIVLYNNADGDFAVTHLTKAHLFHDGRVQWTPPAIFKSSCSIDVTFPPFDQQNCTMKFGSWTY YDGIETIRVEADKIWRPDIVLYNNADGPFQT-STKTVIRYNGTVTWTPPANYKSSCTIDVTFPPFDQQNCTMKFGSWTY YDGIETIRVEADKIWRPDIVLYNNAUGPFQVECKTKALLKYNGMITWTPPANFKSSCYDDTFFPFDQQNCTMKFGSWTY YDGUETIRVEADKIWRPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPANFKSSCYDDTFFPFDQQNCCMKFGSWTY YDGUETIRVEADKIWRPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPANFKSSCVDUTFFPFDQQNCCKKFGSWTY YDGUETIRVEADKIWRPDIVLYNNADGPFQVECKTKALLKYNGMITWTPPANFKSSCVDVTFPFDQQCCKLFFGSWTY YDGUETIRVEADKIWRPDIVLYNNADGPFQSSTYNVVLRHDGAVRWDAPAITKSSCVDVATFPFDQQCCLFFGSWTY HGGUDIRIESSLVWRPDIVLYNNADGNFDVALDISVVSSDGSVRWQPYIRSSCSIQVTYPFDVQCCLFFGSWTY HGGUDSLRIFASSVWLPDVVLNNNDGNFDVALDISVVSSDGSVRWQPYIRSSCSIQVTYPPFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLYNNADGMFEVSFYSNAVVSYDGSIFWLPPAIYKSACKIEVKHPPFDQQNCTMKFRSWTY YGGIHSIKVPSESLWLPDIVLYNNADGMFEVSFYSNAVVSYDGSIFWLPAIYKSACKIEVKHPPFDQQNCTMKFRSWTY YGGUNILRIPAKRIWLPDIVLYNNADGMFEVSFYSNAVVSYDGSIFWLPAIYKSACKIEVKYPPFDQQNCTLKFRSWTY YEGLWVLRVPSTWWRPDIVLENNVDGVFEVALYCNVLVSDGCIYWLPPAIFRSACSISVTYPFPDWQNCSLIFQSQTY FGNISVLRLPPDMVWLPEIVLENNDGSFQISYSCNVLVYHYGFVYWLPAIFRSACSISVTYPPFDWQNCSLIFQSQTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSACSISVTYFPFDWQNCSLIFQSQTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHYGFVYWLPAIFRSACSISVTYFPFDWQNCSLFFSSLKY DKAKIDLVNHSKYDLKDYWESGEWAIKASRGSKHSVTYSCCPDTPYLDITYHFVMQRLPLYFI DKAKIDLVLIGSSM	1966 2066 1822 184 193 1811 2022 178 1776 1774 1776 1773 1771 1774 1766 1773 1771 1774 2700 2466 2488 2552 2455 2455 2452 2452 2452 2452
α1 α2 α3 α5 α6 α7 α10 β1 β3 β4 Υεδ α1 α2 α3 4 α5 α6 α7 9 0 β1 β3 β4 Υεδ α3 α4 5 α6 α7 9 α10 β12 β3 β4 Υεδ α3 α2 α3 α3 α3 α3 α3 α5 α5 α3 α3 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5 α5	117 127 103 105 123 99 97 97 97 97 97 97 92 95 197 207 183 185 194 182 203 178 178	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSLRVESEMIWIPDIVLYNNADGDFAVTHHTKAHLFSTGTVHWVPAIYKSSCSIDUTFFPFDQQNCTMKFGSWTY YGGAEFMRVFAQKIWKPDIVLYNNADGDFAVTHHTKAHLFSTGTVHWVPAIYKSSCSIDUTFFPFDQQNCTMKFGSWSY YGGIKVIRVFSDSVWTPDIVLYNNADGDFAVTHHTKAHLFHDGRYQWTPPAIYKSSCSIDUTFFPFDQQNCTMKFGSWTY YGGIKVIRVFSDSVWTPDIVLFDNADGDFAVTHHTKAHLFHDGRYQWTPPAIYKSSCSIDUTFFPFDQQNCTMKFGSWTY YDGIETLRVFADKIWKPDIVLYNNADGDFAVTHHTKAHLFHDGRYQWTWTPPANYKSSCTIDVTFFPFDQQNCTMKFGSWTY YDGIETLRVFADKIWKPDIVLYNNADGDFAVTHHTKAHLFHDGRYQWTWTPPANYKSSCTIDVTFFPFDQQNCTMKFGSWTY YDGUETLRVFADKIWKPDIVLYNNADGBFATFHTNVLVNSSGHCQYLPFGIFKSSCYDDTRFFPFDHQNCSLKFGSWTY YDGLDSIRIFSSLVWRPDIVLYNNADGMFATHTNVLNNSGHCQYLPFGIFKSSCYDVAAFPFDQQCCTMFFGSWTY YGGLDAIRIPSSLVWRPDIVLYNNADGMFAADAPFGASSTNVVLRHDGAVRWDAFAITKSSCVDUTYFFPDNQCCLTFGSWTH HDGIDSLRITAESVWLPPOVULNNADGMFAADSFYSNAVVSDOSIFWLPFAIYKSSCSIDVTFFPFDQQCCTMFFRSMTY YGGLHSIKVPSESLWLPDIVLYNNADGMFEVSYSNAVSDOSIFWLPFAIYKSSCXIEVKFFPPQQCNCTMKFRSMTY YGGUHSIKVPSESLWLPDIVLNNADGMFEVSVYTNLIVRSNGVVWTPPASYKSSCTMDVTFFPPDQQNCTLKFRSMTY YEGUWLRVPSTMVWRPDIVLENNVDGVFEVALYCNVLYSDGCIYWLPPAIYKSACKIEVKYFFPDQQNCTLKFRSMTY YEGUWLRVPSTMVWRPDIVLENNVDGVFEVALYCNVLYSDGCIYWLPPAIYKSACKIEVKYFFPDQQNCTLKFRSMTY YEGUWLRVPSTMVWRDDIVLENNVDGVFEVALYCNVLYSDGCIYWLPPAIYKSCAUEVTYFFPDQQNCTLKFRSMTY YEGUWLRVPSTMVWRPDIVLENNVDGVFEVALYCNVLYSDGCIYWLPPAIFRSACSISVTYFFPDQQNCSLLFRSGTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYHGGSVTWLPPAIFRSACSISVTYFFPDQQNCSLLFRSGTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVYSGGSTWNLPAITKSCCAEI-YPDTYAFVIRRUPLFYTI DKAKIDLVNMHSKV	1966 1822 1844 1933 1811 2022 1788 1764 1773 1774 1774 1774 2706 2746 2746 2746 2746 2745 2245 2455 2455 2455 2452 2452 2454 2422 2411 2506 239
$\begin{array}{c} \alpha 1 \\ \alpha 2 \\ \alpha 3 \\ \alpha 5 \\ \alpha 6 \\ \alpha 7 \\ \alpha 10 \\ \beta 1 \\ \beta 3 \\ \beta 4 \\ Y \\ \epsilon \\ \delta \\ \alpha 2 \\ \alpha 3 \\ \alpha 5 \\ \alpha 7 \\ 9 \\ \alpha 10 \\ \beta 1 \\ \beta 3 \\ \beta 1 \\ \beta 3 \end{array}$	117 127 103 105 123 99 97 97 97 97 94 92 95 197 207 183 185 194 182 203 178 175 177	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FENITSLRVPSEMIWIPDIVLYNNADGDFAVTHTKAHLFSTGTVHWVPPAIFKSSCKIDVTYFPFDQQNCKMKFGSWSY YGGAEFMRVPAQKIWKPDIVLYNNAVGDFQVDKTKALLKYTGEVTWIPPAIFKSSCKIDVTYFPFDQQNCTMKFGSWSY YDGIEFLRVPAQKIWKPDIVLYNNAVGDFQVEGKTKALLKYTGEVTWTPPAIFKSSCTIDVTFFPFDQQNCTMKFGSWTY YDGIETLRVPAQKIWKPDIVLFDNADGREFGT-STKTVIRYNGTTWTPPAIFKSSCTIDVTFFPFDQQNCTMKFGSWTY YDGIETLRVPAQKIWKPDIVLFNNAVGDFQVEGKTKALLKYNGMITWTPPAIFKSSCVDVDTYFPFDDQQCNLTFGSWTY YDGIETLRVPADKIWKPDIVLYNNAVGDFQVEGKTKALLKYNGMITWTPPAIFKSSCVDVDVTFFPFDQQCNLTFGSWTY YDGLDSIRIPSDLVWRPDIVLYNNAUGDFQVEGKTKALLKYNGMITWTPPAIFKSSCVDVDVAFFPFDQQCNLTFGSWTY YGGLDSIRIPSDLVWRPDIVLYNNADGPQVEGKTKALLKYNGMITWTPPAIFKSCVDVDVAAFFPDQQCNLTFGSWTY YGGLDSIRIPSDLVWRPDIVLYNNADGPQVEGKTKALLKYNGMITWSPAIFKSSCVDVATFFPPDQQCNLTFGSWTY YGGLDSIRIPSDLVWRPDIVLYNNADGSESEPVNTVVLRYDGLITWDAPAITKSSCVDVDVAFFPPDQQCNLTFGSWTY YGGLDSIRIPSDLVWRPDIVLYNNADGWPEGSSTNVVLRHDGAVRWDAFAITKSSCRUDVAAFFPDAQCGTFGSWTH HDGIDSIRTAESVWPDIVLYNNADGWPEVSFYSNAVVSYDGSIFWLPPAIYKSSCNDVTFFFPDQQCCMKFGSWTY YGGUHSIKVPESSLWLPDIVLFENADGREFGSLMTKVIVKSNGTVWTPPASYKSSCTMDVTFFFPDQQCCNLFFGSWTY YGGIESTLRVPSELVPDIVLENNDGVEEVALYCNULVSDGSTWLPPAIYKSSCIEVKFPFDQQNCSLFFGSUTY FGGIESTLRVPSELVWLPEIVLENNIDGQFGVAYDANVLVYEGSVTWLPPAIFKSACSISVTYFFPDQQNCSLFFSSTY FGNISVLRLPPDMVWLPEIVLENNIDGSFQISYSCNVLVHYGFVYWLPAIFRSSCPISVTYFPFDWQNCSLFFSSTY FGNISVLRLPPDMVWLPEIVLENNNDGSFQISYSCNVLVHYGFVYWLPAIFRSCPISVTYFPFDWQNCSLFFSSLKY DGSVVAINPESDQF	1966 2066 1822 193 181 2022 178 177 1744 1786 1766 1733 1711 174 2700 2466 2455 2455 2455 2452 2452 2452 2452
α1 α2 α3 α5 α7 α10 β1 β2 β4 Υεδ α2 α3 α45 α7 90 β1 23 4 45 α6 79 0 β1 β2 β4 Υεδ α2 α3 α45 α6 79 β4 Υεδ β4 β2 β4 β4 β2 β4 β4 β2 β4 β4 β2 β3 β4 β2 β3 β4 β2 β3 β4 β2 β3 β4 β2 β3 β4 β3 β4 β3 β4 β3 β3 β4 β3 β3 β3 β3 β3 β3 β3 β3 β3 β3 β3 β3 β3	117 127 103 105 123 99 97 97 94 95 97 97 94 95 197 207 183 185 194 182 203 178 178 175 179 177	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FENITSLRVPSENIWTPDIVLYNNADGEFAVTHMTKAALFSTGTVHWVPPAIFKSSCSIDVTFPFDEQONCSMKFGSWTY YGGAEFMRVPAQKIWKPDIVLYNNADGDFAVTHMTKAALFSTGTVHWVPPAIFKSSCSIDVTFPFDEQONCTMKFGSWSY YENVTSIRIPSELWRPDIVLYNNADGDFAVTHMTKAALFHDGRVQWTPAIFKSSCSIDVTFPFDEQONCTMKFGSWTY YGGIETLRVPAQKIWKPDIVLFNNADGPFAVTHITKAALFHDGRVQWTPAITKSSCSIDVTFPFDEQONCTMKFGSWTY YDGIETLRVPAQKIWKPDIVLFNNADGDFAVTHITKAALFHDGRVQWTPAITKSSCSIDVTFPFDEQONCTMKFGSWTY YDGIETLRVPAQKIWKPDIVLFNNADGDFAVTHITKAALFHDGRVQWTPAITKSSCVDVTFPFDEQONCTMKFGSWTY YDGUETLRVPAQKIWKPDIVLYNNADGDFAVTHITVNUCNSGHCYUFPGIFKSSCYIDVRWFPFDVQHCKLKFGSWSY YDGLDSIRIPSDLVWRPDIVLYNSADBRFDATFHTNVLVNSSGHCYUFPGIFKSSCYDVAAFPEDAQHGCLTFGSWTY YGGUNKKVLPSNUMPDIVLYNKADDESEPVNTNVVLRYDGLITWDAPAITRSSCRVDVAAFPEDAQHGCLTGSWTH HDGIDSLRITAESVWLPDVVLINNADGMFEVSFYSNAVVSYDGSIFWLPPAIYKSSCKIDVXAFPEDAQHCGLTGSWTY YGGVNILRIPSKIWLPDIVLFENADGRFEGSLMTKVIVSNGTVWTPPASVKSSCTMDVTFFPFDQQNCTMKFRSWTY YGGUNILRIPAKHWLPDIVLFENADGRFEGSLMTKVIVSSDGVTWUPPASVKSSCTMDVTFFPFDQQNCTKKFRSWTY YGGUNILRIPAKHWLPDIVLENNUDGVFEVALYNILVRSNGSVLWLPPAIYRSACKIEVKHPPFDQQNCTKKFRSWTY YGGUISKVPSSLWPPDIVLENNUDGVFEVALYNIVISSDGCIYWLPPAIYRSACSISVTYFPFDWQNCSLIFQSGTY FGGIETLRVPSELVWLPPIVLENNUDGSFGISYSCNULVYHYGFYWLPPAIYRSCAELFYPFDWQNCSLIFQSGTY FGGIETLRVPSELVWLPEIVLENNUDGSFGISYSCNULVYHYGFYWLPPAIYRSCCAEL-YPDITYAFVIRTPLFYTI DKAKIDLUNMSK9	1966 2066 1822 1844 193 1811 2022 1777 1744 1788 1776 1766 1733 1711 174 2700 2466 2455 2455 2644 2452 2452 2452 2452
α1 α2 α3 α5 α6 α7 α10 β1 β2 β4 Υεδ α12 α3 α4 56 α7 90 β1 β2 α3 α4 56 α7 90 β1 β2 β4 Υεδ α3 α4 56 α7 90 β1 β2 β3 4 Σ	117 127 103 105 122 99 95 97 97 94 95 97 97 94 95 95 197 207 183 185 194 203 179 178 175 179 177 177	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FONTSLRVPSENIWTPDIVLYNNADGDFAVTHETKAHLFSTGTVHWVPPAIFKSSCKIDVTFPFDEQQNCSMKRGSWTY YGGAEFMVPAQKIWKPDIVLYNNAUGDFQAVTHETKAHLFHDGRVQWTPPAIFKSSCKIDVTFPFPUQNCTMKFGSWTY YGGAEFMVPAQKIWKPDIVLYNNAUGDFQAVTHETKAHLFHDGRVQWTPPAIFKSSCKIDVTFPFPUQNCTMKFGSWTY YGGAEFMVPAQKIWRPDIVLFNNAUGDFQAVTHETKAHLFHDGRVQWTPPAIFKSSCTIDVTFPFPEDQNCTMKFGSWTY YGGIVIRVPSDSVWTPDIVLFNNAUGDFQACKTKALLKYNCMITWTPPAIFKSSCTIDVTFPFPUQNCSLKFGSWTY YDGIBTLRVPADKIWKPDIVLFNNAUGDFQASKKALLKYNCMITWTPPAIFKSSCVIDVTFPFPDQQNCTMKFGSWTY YGGLDSIRIPSDLVMRPDIVLFNNAUGDFQASKKALLKYNCMITWTPPAIFKSSCVDVTVFPFDNQCSLTFGSWTY YGGLDSIRIPSDLVMRPDIVLYNNADGPFQASKTNVVLRHDGAVRWDAPAITKSSCVDVTYFPFDNQCCNLTFGSWTY YGGLDAIRIPSSLVWRPDIVLYNKADQESSEPVNTNVVLRHDGAVRWDAPAITKSSCVDVTYFPFDWQNCTMVFSSYSY FDMKKVRLPSKHIWLPDVVLINNADGNFVSFYSNAVVSVDGSIFWLPPAIFKSSCVDVTFFPFDQNCTMKFRSMTY YGGIHSIKVPSSSWLPDIVLYNNADGMFVSFYSNAVVSVDGSIFWLPPAIFKSACKIEVKHFPFDQONCTMKFRSMTY YGGIHSIKVPSSSWLPDIVLFENADGRFEGSLMTKVIVKSNGTVVWTPPASYKSSCTMVTFFPFDWQNCSLIFQSOTY FGGIETLRVPSSLVWRPDIVLENNDDGFFUALYCNUVSPDGCIWLPPAIFKSACSISVTYFPFDWQNCSLIFQSOTY FGGISVLRIPPDNVWLPEIVLENNIDGQFGVAYDAULVVLSPGGSVTWLPPAIFKSACSISVTYFPFDWQNCSLIFQSOTY FGGISVLRIPPDMVWLPEIVLENNIDGSFQISYSCNULVYHYGFVWLPPAIFXSCSISVTYFPFDWQNCSLIFQSOTY FGGISVLRIPPDMVWLPEIVLENNIDGSFQISYSCNULVYHYGFVWLPPAIFXSCFISVTYFPFDWQNCSLIFQSOTY FGGISVLRIPPDMVWLPEIVLENNIDGSFQISYSCNULVYHYGFVWLPPAIFXSCFISVTYFPFDWQNCSLIFRSTY YDGLWLRVPSSYMTPDIVLENNDDGSFQISYSCNULVYHYGFVWLPPAIFXSCFISVTYFPFDWQNCSLIFRSTY YDGNYULIPPDMVWLPEIVLENNIDGSFQISYSCNULVYHYGFVWLPPAIFXSCFISVTYFPFDWQNCSLIFRSTY YDGNYULIFPDMVWLPEIVLENNIDGSFQISYSCNULVYHYGFVYLPPAIFXSCFISVTYFPFDWQNCSLIFRSTY YDGNYULIRTPHTVURMTYT JCAKIDLUNGSSCFFFFFTUNDGSFQISYSCNULVYHYGFVYLPPAIFXSCFISVTYFPFDWQNCSLIFRSTY YDGNYULIRTPHTYTTRTFT JCAKIDLUNGSSCFFFFFFFTUNDGSGEWIIKSSCFFFFFTU JCAKIDLUNGSSCFFFFFFFFFFFFTUNDGSGEWIIKSSCFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	1966 2066 1822 1933 1811 2022 1778 1774 1774 1774 1774 1774 1774 1774
$\begin{array}{c} \alpha 1 \\ \alpha 2 \\ \alpha 3 \\ \alpha 5 \\ \alpha 7 \\ \alpha 6 \\ \alpha 7 \\ \alpha 10 \\ \beta 1 \\ \beta 3 \\ \beta 4 \\ \gamma \varepsilon \\ \delta \\ \alpha 1 \\ 2 \\ \alpha 4 \\ 5 \\ \alpha 6 \\ 7 \\ 9 \\ 0 \\ 1 \\ 1 \\ 2 \\ 3 \\ 4 \\ \gamma \varepsilon \end{array}$	117 127 103 105 122 123 99 98 95 99 97 97 97 97 97 97 97 97 97 97 97 97	YGGVKKIHIPSEKIWRPDLVLYNNADGDFAIVKFTKVLLQYTGHITWTPPAIFKSYCEIIVTHFPFDEQNCSMKLGTWTY FCNITSLRVPSEMIWIEDIVLYNNADGBFAVTHMTKALLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCCMKFGSWTY YGGAEFMRVPAQKIWRPDIVLYNNADGDFAVTHDTKALLFSTGTVHWVPPAIYKSSCSIDVTFFPFDQQNCCMKFGSWTY YGGAEFMRVPAQKIWRPDIVLYNNADGDFAVTHDTKALLFYGEVTWIPPAIYKSSCSIDVTFFPFDQQNCTMKFGSWTY YGGIETLRVPADKIWRPDIVLYNNADGDFAVTHDTKALLFYGUTWTPPAIYKSSCTIDVTFFPFDLQNCSMKFGSWTY YGGIETLRVPADKIWRPDIVLYNNADGBFATHDTVLWSGHCQWTPPAIYKSSCTIDVTFFPFDLQNCSMKFGSWTY YGGIDSIRIFSDLWRPDIVLYNNADGBFADATFHTNVLVNSGHCQYLPPGIFKSSCYIDVTFFPFDLQNCSMKFGSWTY YGGLDSIRIFSDLWRPDIVLYNNADDSSEPVNTNVVLRYDGLITWDAPAITKSSCRVDDTYFPFDMQQCNLTFGSWTY YGGLDAIRIFSSLWRPDIVLYNNADGMEPGASTTNVVLRYDGLITWDAPAITKSSCRVDVAFFPDAQHCGLFFGSWTY YGGLDAIRIFSSLWRPDIVLYNNADGMEPGASTNVVLRHDGAVRWDAPAITSSCRVDVAFFPDAQHCGLFFGSWTY YGGLDAIRIFSSLWRPDIVLYNNADGMEVSFYSNAVVSYDGSIFWLPPAIYKSACKIEVKHPPDQQNCTMVFSSYSY FDNMKKVRLPSKHWLPDVVLNNNDGMFDVALDISVVVSBGSVRWPPGIYRSSCSIGVTYFPPDMQNCTMVFSSYSY FGNNKKVRLPSKHWLPDIVLINNADGMEVSFYSNAVVSYDGSIFWLPPAIYKSACKIEVKHPPDQQNCTMKFRSWTY YGGUISIFARKTWLPDIVLYNNADGYFEVSVYNLVVSBGSVTWLPPAIYRSSCRMDVTFPPFDMQNCSLIFSSTY FGNISVLRVPSELWPDIVLENNDGGFGSLMYKVIVKSNGTVWTPPASYKSSCTMDVTFPPFDMQNCSLIFSSTY FGNISVLRVPSELWWLPDIVLENNDGFFGSLMYKVIVKSNGTVWTPPASYKSCAVEVTYPPFDMQNCSLIFSSTY FGNISVLRVPSELWWLPEIVLENNIDGFGVAYDANULYFGGSVTWLPPAIFRSCFISVTYFPFDMQNCSLIFSSTY FGNISVLRVPSELWWLPEIVLENNIDGFFGNSTYNLIVSSGEWVIKESRGWKHSVTYSCZVEVTYFPFDMQNCSLIFSSLKY FGNISVLRLPPDMVWLPEIVLENNDGSFQISYSCNULVHYGFVWLPPAIFRSCFISVTYFPFDMQNCSLIFFSIY GGSUSLLQMQQT	1966 2062 184 193 181 2022 178 177 174 178 176 176 173 171 174 2261 270 2468 255 2455 245 242 242 241 250 238 237 238 237 246 245

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α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2 β3 β4 Υ ε δ	262 271 247 249 256 246 242 251 240 239 238 247 246 252	NVIIPCLLFSFLTGLVFYLPTDSG-EKMTLSISVLLSLTVFLLVIVELIPSTSSAVPLIGKYMLFTMVFVIASIIITVIV NLIIPCLLISCLTVLVFYLPSDCG-EKITLCISVLLSLTVFLLVITEIIPSTSLVIPLIGEYLLFTMIFVTLSIVITVFV NLIIPCLLISCLTVLVFYLPSDCG-EKVTLCISVLLSLTVFLLVITEIIPSTSLVIPLIGEYLLFTMIFVTLSIVITVFV FLIPCLLISCLTVLVFYLPSDCG-EKVTLCISVLLSLTVFLLVITEIIPSTSLVIPLIGEYLLFTMIFVTLSIVITVFV NLLIPCLLISCLTVLVFYLPSDCG-EKVTLCISVLLSLTVFLLVITEIIPSTSLVPLVGEYLLFTMIFVTLSIVITVFV NLLIPCVLISALALVFLPAASG-EKVSLGTVLLSLTVFLLVITEIIPSTSLVPLVGEYLLFTMIFVTLSIVTVFV NLLIPCVLISALALVFLPAASG-EKVSLGVTLLAMTVFQLMVAFIMPA-SENVPLIGKYYNATMIVGSVVVTVV NLLIPCVLISLAPLSFYLPAASG-EKVSLGVTLLALTVFQLVAEIMPA-SENVPLIGKYYNATMTVTFSALTILV NLLPCVLISLAPLSFYLPAASG-EKVSLGVTVLLALTVFQLVAEIMPA-SENVPLIGKYYNATMTVTFSVLSVV NLLIPCVLISLAPLSFYLPAASG-EKVSLGVTVLALTVFQLVAEINPA-SENVPLIGKYYNATMTVTFSVLSVV NLLIPCVLISLAILVFYLPPDGG-EKMTLCISVLALTVFLLVIEEIIPSSKVIPLIGKYMATMTVTFSVISVV NLIPCULTSLAILVFYLPPDGG-EKMTLCISVLALTVFLLVIEEIIPSSKVIPLIGKYLMFTMVLVTFSVISVV NLIPCULTSLAILVFYLPSDCG-EKMTLCISVLALTVFLLVSTVFV NLIPCULTSLAILVFYLPSDCG-EKMTLCISVLALTVFLLISKVPPTSLDVPLIGKYLMFTMVLVTFSIVTSVCV NILPCULTSLAILVFYLPSDCG-EKMTLCISVLALTFFLLISKVPPTSLDVPLIGKYLMFTMVLVTFSIVTSVCV NILPCULSSVAILHFLPAKAGGQKCTVAINVLLAQTVFLFLVAKVPTSLQVPLIGKYLMFTMVLVTFSIVTSVCV NILPCVLSGVVLAAYFLPAQAGGQKCTVSINVLLAQTVFLFLVAKVPTSLSVPLIGKFLFFVMVATLIVVNVVVVICVIV	340 349 325 327 334 324 320 319 329 318 317 316 326 325 330
αl	341	INTHHRSPSTHV-MPNWVRKVFIDTIPNIMFfstMKRPSREKQDKKIFTEDIDISDISGKPGP	402
α2	350	LNVHHRSPSTHT-MPHWVRGALLGCVPRWLLMNRP	383
α3	326	LNVHYRTPTTHT-MPSWVKTVFLNLLPRVMFMTRPTSNEGNAQKPKPLYG-ALLSNLNCFSKAESKGCKEGYPCQD-	399
α4	328	LNVHHKSPKTHT-MPTWVKKVFLDIVPKLLLMKKPSVVKDNCKLLESMHKMASAPKFWPEPEGEPPATSGTQSLH-	402
α5	335	INTHHRSSSTHNAMAPLUKRIFLHTLPKLLCMKSHUDRIFTQKEETESGSGP	380
a 6	323		392
~ 9	221		201
~10	320		300
B1	330	INI HERSEHTHA MELWARDTEHKLEIVIE	400
82	319	INVIHUSSPTHTT - MARWKWELEKLDALLEN - MOOREHCAROELELERGO - * FREGAGAL FEREARGANSCH	388
в <u>з</u>	318	INVHHRSSSTYHDMAPWVKRLFLOKLPKLLCMKDHVDRYSSPEKEESOPVVKGKVLEKKKOKOLSDGE	385
β4	317	LNVHHRSPSTHT-MAPWVKRCFLHKLPTFLFMKRPGPDSSPARAFPPSKScvTKPEATATSTSPSNFYGNSM	387
Ŷ	327	LNVSLRSPHTHS-MARGVRKVFLRLLPQLLRMHVRPLAPAAVQDTQSRLQNGSSGWSITTGEEVALCLPRSELL-	399
ε	326	LNVSQRTPTTHA-MSPRLRHVLLELLPRLLGSPPPPEAPRAASPPRRASSVGLLLRAEELILKKPRSELV-	394
δ	331	LNIHFRTPSTHV-LSEGVKKLFLETLPELLHMSRPAEDGPSPGALVRRSSSLGYISKAEEYFLLKSRSDLM-	400
α1 α2 α3 α4 α5 α6 α7 α9 α10 β1 β2 β3 β4 Υ ε δ	403 384 400 403 387 393 418 392 391 401 389 386 388 400 395 401	PPMGFHSPLIKHPEVKSAIE 	422 392 446 457 398 434 467 416 397 429 397 429 443 425 440
α1 α2	393	r k snsubwl esnudaeereuuweeedrwacadbyansuut cshch hsg	445
α3	595	TTTYTOPOJUWIEGUVUGEELEVVVEEEULWACAGU VAPSVYCICSUGUIUS9	
α4 α5 α6 α7	458	pglakarslsvqhmsspgeaveggvrcrsrsiqycvprddaapeadgqaagalasr-nthsaelpppdqpspckctckke	536
α9	417	vcagyk	42.6
α10			-20
β1			
β2			
β3			
β4			
Ŷ			
ε			
δ			

α1	423	GIKYIAETMKSDQESNNAAAEWKYVAMVMDHILLGVFMLVCIIGT	LA 469
α2	446	asgpkaeallqegelllsphmqkaleGVHYIADHLRSEDADSSVKEDWKYVAMVIDRIFLWLFIIVCFLGT	IG 518
α3	447	SVKYIAENMKAQNEAKEIQDDWKYVAMVIDRIFLWVFTLVCILGT.	AG 493
α4	537	pssvspsatvktrstkappphlplspaltraveGVQYIADHLKAEDTDFSVKEDWKYVAMVIDRIFLWMFIIVCLLGT	VG 616
α5	399	SIRYITRHIMKENDVREVVEDWKFIAQVLDRMFLWTFLFVSIVGS	LG 445
α6	435	SVQFIAENMKSHNETKEVEDDWKYVAMVVDRVFLWVFIIVCVFGT.	AG 481
α7	468	EVRYIANRFRCQDESEAVCSEWKFAACVVDRLCLMAFSVFTIICT	IG 514
α9	427	NIEYIAKCLKDHKATNSKGSEWKKVAKVIDRFFMWIFFIMVFVMT	IL 473
α10	398	HVATIANTFRSHRAAQRCHEDWKRLARVMDRFFLAIFFSMALVMS	LL 444
β1	439	BISYIARQLQEQEDHDALKEDWQFVAMVVDRLFLWTFIIFTSVGT	LV 485
β2	430	GVRFIADHMRSEDDDQSVSEDWKYVAMVIDRLFLWIFVFVCVFGT	IG 476
βЗ	398	SIRYISRHVKKEHFISQVVQDWKFVAQVLDRIFLWLFLIVSVTGS	VL 444
β4	430	GVSFIAQHMKNDDEDQSVVEDWKYVAMVVDRLFLWVFMFVCVLGT	VG 476
Y	444	ACNLIACARHQQSHFDNGNEEWFLVGRVLDRVCFLAMLSLFICGT	AG 490
ε	426	AVNFVAESTRDQEATGEEVSDWVRMGNALDNICFWAALVLFSVGS	SL 472
δ	441	GANFIVNHMRDQNNYNEEKDSWNRVARTVDRLCLFVVTPVMVVGT.	AW 487
م 1	470	VFACRITEINOOG	482
α2	519	LFLPFLAGMI	529
α-3	494		505
α4	617		627
α5	446	LFVPVIYKWANILIpvhignank	468
α6	482	LFLOPLLGNTGKS	494
α7	515	ILMSAPNFVEAVSkdfa	531
α9	474	I IARAD	479
α10	445	VLVOAL	450
β1	486	IFLDATYHLPPPDpfpp	501
β2	477	MFLOPLFONYTTTtflHsdhsapssk	502
β3	445	IFTPALKMWLHsyh-	458
β4	477	LFLPPLFOTHAASEqpyaagrd	498
Ŷ	491	IFLMAHYNRVPALpfpGdprpy	512
ε	473	IFLGAYFNRVPDLpyaPciqp	493
δ	488	IFLQGVYNQPPPQpfpGdpysynvqdkrfihttpswwwncbinlmnihqovtoolscobaltcobaltcgicmdqetc	ob 567

α1			
α2			
α3			
α4			
α5			
α6			
α7			
α9			
α10			
β1			
β2			
βЗ			
β4			
Y	513	-lpspd	517
ε			
δ	568	altridvbtjjk	579

Figure S2. Negative isotype control staining. Representative micrographs evaluating non-specific staining of the bronchial epithelia on FFPE tissues using anti-isotype matched GFP IgG antibodies (in red) from mouse (up) or rabbit (down), and DAPI (cell nuclei, blue). Magnification corresponding to the selected area is shown.



Figure S3. Localization of nAChRs on lung tissues from the Human Protein Atlas. Representative micrographs showing the bronchial epithelia on FFPE lung tissues: immunohistochemistry for α 3, α 7, and β 1.

