

Figure S1. Percentage of nucleotides in 250-nt segments of the SARS-CoV genome

nucleotide G nucleotide T nucleotide C nucleotide A

Non-UTR regions of all the isolates are considered; positions (x-axis) are on the ClustalX output scale; percentage of nucleotides in the corresponding blocks are represented on y-axis



Figure S2. Deviation of percentages of nucleotides over 250-nt blocks from the corresponding percentages in the whole dataset



Figure S3. Distribution of distances between the neighboring SNVs, and numbers of their occurrences



Figure S4. Distrubution of isolates per number of SNVs



Figure S5. Entropy of genome nucleotide positions

Figure S6. Distribution of INDELs in 5'UTR (a), 3'UTR (b) and in interval 27700-28300 (c)

Figure S7. Differences between the percentage of nucleotides at a given position and in the whole genome, for up to the distance 10 left and right from SNV sites

a)

b)

Figure S8. Distribution of substitutions preceded by different nucleotide bases (a) and followed by different nucleotide bases (b)

Envelope protein

Unknown (putative) orfs

orf1ab

Total in proteins

Membrane protein

Nucleocapside protein

Figure S9. Distribution of nucleotides over the three codon positions in specific proteins and in total

Figure S10. Root distances for isolates from the dataset

The isolates ZMY1, ZJ01, and the two Shanghai isolates have the largest root distance in the A group (the south side of the picture), and thus may not belong to it. (The isolates SoD and GD69 also have large root distances, but thay have been moved into the A group on the basis of their SNV sites)

Table S1. List of all the isolates considered. It includes identifiers, accession numbers, revision dates, country and source of the isolates considered, labels to be referred to in this paper, as well as the length of isolates and the ambiguous nucleotide codes. The labels are assigned in the (approximate) order of the first submission of isolates

T 1 1	ID	A • NT	T (1			CT	T , (C 1 , (4, 1)	N
Label	ID	Accession No.	Length	Revision date	Country/Source	GI	FirstSubmitted	No.
		NG 004510.0	20751			20251026	10.400.0000	ambigBases
1	Tor2	NC_004718.3	29751	30-SEP-2004	Canada: Toronto, patient #2	30271926	13-APR-2003	
2		AY274119.3		24-MAR-2004	Canada: Toronto, patient #2	30248028	23-APR-2003	
3	Urbani	AY278741.1	29727	12-AUG-2003	USA: Atlanta cell_line="Vero"	30027617	17-APR-2003	
4	CUHK-W1	AY278554.2	29736	31-JUL-2003	China: Hong Kong	30027610	17-APR-2003	
5	BJ01	AY278488.2	29725	01-MAY-2003	China: Beijing	30275666	17-APR-2003	
6	BJ02	AY278487.3	29745	05-JUN-2003	China: Beijing	31416292	17-APR-2003	
7	BJ03	AY278490.3	29740	05-JUN-2003	China: Beijing	31416305	17-APR-2003	
8	BJ04	AY279354.2	29732	05-JUN-2003	China: Beijing	31416306	19-APR-2003	
9	NS-1	AY508724.1		17-JAN-2004		40795744	18-DEC-2003	
10	GD01	AY278489.2	29757	18-AUG-2003	China: Beijing	31416290	17-APR-2003	
11	HKU-39849	AY278491.2	29742	29-AUG-2003	China: Hong Kong	30023963	18-APR-2003	
12	CUHK-Su10	AY282752.2	29736	17-NOV-2003	China: Hong Kong	30421451	24-APR-2003	
13	Sin2500	AY283794.1	29711	12-AUG-2003	Singapore	30468042	27-APR-2003	
14	Sin2679	AY283796.1	29711	12-AUG-2003	Singapore	30468044	27-APR-2003	
15	Sin2774	AY283798.2	29711	02-OCT-2003	Singapore	37361915	27-APR-2003	
16	Sin2677	AY283795.1	29705	12-AUG-2003	Singapore	30468043	27-APR-2003	
17	Sin2748	AY283797.1	29706	12-AUG-2003	Singapore	30468045	27-APR-2003	N=1
18	Frankfurt 1	AY291315.1	29727	16-MAR-2004	Germany: Frankfurt	31581502	06-MAY-2003	
19	FRA	AY310120.1	29740	12-DEC-2003	Germany: patient from Frankfurt	33578015	29-MAY-2003	
20	ZJ01	AY297028.1	29715	19-MAY-2003	China: Beijing	30910859	12-MAY-2003	M=1
21	SZ3	AY304486.1	29741	05-NOV-2003	China: Hong Kong	34482137	26-MAY-2003	
22	SZ16	AY304488.1	29731	05-NOV-2003	China: Hong Kong	34482139	27-MAY-2003	
23	GZ50	AY304495.1	29720	05-NOV-2003	China: Hong Kong	34482146	27-MAY-2003	
24	GD69	AY313906.1	29754	15-DEC-2003	China: Jiangmen, Guangdong	37960831	03-JUN-2003	
		1	1			_	isolated in	
							May 2003	
25	TWC	AY321118.1	29725	26-JUN-2003	Taiwan, first fatal case	31873092	11-JUN-2003	
26	HSR 1	AY323977.2	29751	15-OCT-2003	Italy	33115118	16-JUN-2003	R=1
27	Taiwan TC1	AY338174.1	29573	28-JUL-2003	Taiwan	32493129	08-JUL-2003	
28	Taiwan TC2	AY338175.1	29573	28-JUL-2003	Taiwan	32493130	09-JUL-2003	
29	Taiwan TC3	AY348314.1	29573	29-JUL-2003	Taiwan	33188324	23-JUL-2003	
30	CUHK-AG01	AY345986.1	29736	29-NOV-2003	Hong Kong: patient #1 of the	33114190	18-JUL-2003	
20	0011111001		_,,00	27 110 1 2000	Amoy Gardens cohort	00111190	10002 2000	
31	CUHK-AG02	AY345987.1		29-NOV-2003	patient #2 of the Amoy Gardens	33114202	18-JUL-2003	
01	0011111002			2, 110 / 2000	cohort	0011.202	10002 2000	
32	CUHK-AG03	AY345988 1	29736	29-NOV-2003	Hong Kong: patient #3 of the	33114214	18-IUL-2003	
52		111545900.1	27730	27 110 1 2005	Amov Gardens cohort	55114214	10 301 2003	
33	PUMC01	AY350750 1	29738	17-NOV-2003	China: Beijing	38231927	24-1111-2003	
34	PUMC02	AY357075.1	29738	17-NOV-2003	China: Beijing	38231932	31-IUL-2003	
35	PUMC03	AY357076.1	29745	17-NOV-2003	China: Beijing	38231932	31-JUL-2003	
36	7MV 1	AV351680.1	20740	03 AUG 2003	China: DerJing	33304210	28 ILIL 2003	
27		A D006557 1	29749	03-AUG-2003	Taiwan; patient #01aultured	22411200	20-JUL-2003	
29	Т WП WC2	AF000337.1 AV262608.1	29121	12 AUG 2003	Taiwan: Honing Hospital	22518724	05 AUG 2002	
30	WC2	A1302098.1		13-AUG-2003		33318/24	03-A00-2003	
39	TWK	AP006559.1	29/27	02-AUG-2003	Taiwan: patient #06 - primary	33411429	30-JUL-2003	
40	TWS	AP006560.1	29727	02-AUG-2003	Taiwan: patient #04 - primary	33411444	30-JUL-2003	
41	TWY	AP006561.1	29/27	02-AUG-2003	Taiwan: patient #02 - primary	33411459	30-JUL-2003	
42	TWC3	AY362699.1	29/27	13-AUG-2003	Taiwan: Hoping Hospital –	33518/25	05-AUG-2003	
10		1 200 4550 4			throat swab		A0 1111 A00A	
43	TWJ	AP006558.1	29725	02-AUG-2003	Taiwan: patient #043	33411414	30-JUL-2003	
	0700	112005541	207.00	21 1431 2004	Primary	41000510	15 000 0000	
44	GZ02	AY 390556.1	29760	31-JAN-2004	China: Guangzhou	41323/19	15-SEP-2003	
45	WHU	AY394850.2	29728	07-JUN-2004	China: Wuhan	40795428	18-SEP-2003	
46	HZS2-D	AY394989.1	29736	29-JAN-2004	China: Guangzhou	37624332	19-SEP-2003	
47	HZS2-E	AY394990.1	29736	29-JAN-2004	China: Guangzhou	37624333	19-SEP-2003	
48	HZS2-Fc	AY394991.1	29736	29-JAN-2004	China: Guangzhou	37624334	19-SEP-2003	
49	HZS2-C	AY394992.1	29736	29-JAN-2004	China: Guangzhou	37624335	19-SEP-2003	
50	HGZ8L2	AY394993.1	29736	29-JAN-2004	China: Guangzhou	37624336	19-SEP-2003	
51	LC1	AY394998.1	29736	29-JAN-2004	China: Guangzhou	37624341	19-SEP-2003	
52	GZ-B	AY394978.1	29640	29-JAN-2004	China: Guangzhou	37624321	19-SEP-2003	
53	GZ-C	AY394979.1	29645	29-JAN-2004	China: Guangzhou	37624322	19-SEP-2003	
54	HSZ2-A	AY394983.1	29699	29-JAN-2004	China: Guangzhou	37624326	19-SEP-2003	
55	HZS2-Fb	AY394987.1	29709	29-JAN-2004	China: Guangzhou	37624330	19-SEP-2003	
56	HSZ-Bb	AY394985.1	29530	29-JAN-2004	China: Guangzhou	37624328	19-SEP-2003	
57	HSZ-Cb	AY394986.1	29729	29-JAN-2004	China: Guangzhou	37624329	19-SEP-2003	
58	HSZ-Bc	AY394994.1	29765	29-JAN-2004	China: Guangzhou	37624337	19-SEP-2003	
59	HSZ-Cc	AY394995.1	29765	29-JAN-2004	China: Guangzhou	37624338	19-SEP-2003	
60	ZS-B	AY394996.1	29683	29-JAN-2004	China: Guangzhou	37624339	19-SEP-2003	
61	ZS-A	AY394997.1	29683	29-JAN-2004		37624340	19-SEP-2003	
62	ZS-C	AY395003.1	29647	29-JAN-2004	China: Guangzhou	37624346	19-SEP-2003	
63	LC2	AY394999.1	29350	29-JAN-2004	China: Guangzhou	37624342	19-SEP-2003	
64	LC3	AY395000.1	29350	29-JAN-2004	China: Guangzhou	37624343	19-SEP-2003	
65	LC4	AY395001.1	29350	29-JAN-2004		37624344	19-SEP-2003	
66	LC5	AY395002.1	29350	29-JAN-2004	China: Guangzhou	37624345	19-SEP-2003	
67	AS	AY427439.1	29711	21-OCT-2003	Italy: Milan	37576845	02-OCT-2003	
68	SoD	AY461660.1	29715	23-NOV-2003	Russia	38385714	31-OCT-2003	
69	ShanghaiQXC1	AY463059.1	29592	05-JAN-2004	Shanghai	40457433	11-NOV-2003	M=1, R=1, Y=1
70	ShanghaiQXC2	AY463060.1	29013	05-JAN-2004	Shanghai	40457448	11-NOV-2003	R=1, Y=1
71	Sino1-11	AY485277.1	29741	30-NOV-2003	China: Beijing	38505482	21-NOV-2003	
72	Sino3-11	AY485278.1	29740	30-NOV-2003	China: Beijing	38505491	21-NOV-2003	
73	TW1	AY291451.1	29729	25-FEB-2004	Taiwan	30698326	06-MAY-2003	
74	TW2	AY502925.1	1	25-FEB-2004	Taiwan	40548897	15-DEC-2003	
75	TW3	AY502926 1	29729	25-FEB-2004	Taiwan	40548909	15-DEC-2003	M=1. Y=1
76	TW4	AY502927 1	29729	25-FEB-2004	Taiwan	40548921	15-DEC-2003	R=1. W=1
77	TW5	AY502928.1	29729	25-FEB-2004	Taiwan	40548933	15-DEC-2003	
78	TW6	AY502929.1	29729	25-FEB-2004	Taiwan	40548945	15-DEC-2003	
79	TW7	AY502930 1	29729	25-FEB-2004	Taiwan	40548957	15-DEC-2003	
80	TW8	AY502931 1	29729	25-FEB-2004	Taiwan	40548969	15-DEC-2003	M=1
81	TW9	AY502932 1	29729	25-FEB-2004	Taiwan	40548981	15-DEC-2003	R=1
82	TW10	AY502932.1	29729	25-FEB-2004	Taiwan	40548873	15-DEC-2003	
02	1 11 10	111302723.1	47147	20 I LD-2004	1 ui w uii	10010010	15 DLC-2005	l

Label	ID	Accession No.	Length	Revision date	Country/Source	GI	FirstSubmitted	No.
		-						ambigBases
83	TW11	AY502924.1	29727	25-FEB-2004	Taiwan	40548885	15-DEC-2003	W=1, Y=2
84	Sin842	AY559081.1	29716	24-SEP-2004	Singapore	45644994	24-FEB-2004	
85	Sin852	AY559082.1	29670	24-SEP-2004	Singapore	45644996	24-FEB-2004	
86	Sin3765V	AY559084.1	29722	24-SEP-2004	Singapore	45645000	24-FEB-2004	
87	Sin848	AY559085.1	29713	24-SEP-2004	Singapore	45645001	24-FEB-2004	
88	Sin849	AY559086.1	29661	24-SEP-2004	Singapore	45645003	24-FEB-2004	
89	Sin846	AY559094.1	29577	24-SEP-2004	Singapore	45645021	24-FEB-2004	
90	Sin3725V	AY559087.1	29716	24-SEP-2004	Singapore	45645004	24-FEB-2004	Y=5
91	SinP1	AY559088.1	29714	24-SEP-2004	Singapore	45645007	24-FEB-2004	R=1
92	SinP3	AY559090.1	29725	24-SEP-2004	Singapore	45645013	24-FEB-2004	R=1
93	SinP5	AY559092.1	29713	24-SEP-2004	Singapore	45645017	24-FEB-2004	R=1
94	SinP4,	AY559091.1	29710	24-SEP-2004	Singapore	45645016	24-FEB-2004	R=1
95	Sin845	AY559093.1	29712	24-SEP-2004	Singapore	45645019	24-FEB-2004	
96	Sin847	AY559095.1	29719	24-SEP-2004	Singapore	45645022	24-FEB-2004	
97	Sin850	AY559096.1	29720	24-SEP-2004	Singapore	45645023	24-FEB-2004	
98	LLJ-2004	AY595412.1	29716	29-JUN-2004	"aerosol sample"	49176846	08-APR-2004	K=3, M=1, R=5,
					China: Beijing			S=1, W=1
99	TJF	AY654624.1	29745	24-JUL-2004	China	50365700	16-JUN-2004	
100	CDC#200301157	AY714217.1	29727	28-SEP-2004	USA	52546959	10-AUG-2004	
101	Sin3408	AY559083.1	29767	24-SEP-2004	Singapore	45644998	24-FEB-2004	N=263, Y=1
102	SinP2	AY559089.1	29717	24-SEP-2004	Singapore	45645010	24-FEB-2004	N=30, R=1, S=1
103	Sin3408L	AY559097.1	29715	24-SEP-2004	Singapore	45645024	24-FEB-2004	N=105, W=3, Y=1

Table S2. SARS-CoV genome polymorphism (extended table). All the 103 isolates are represented. Shaded entries correspond to annotated isolates. Last three isolates contain large number of ambiguous nucleotide codes (N). IDENTIFICATION of isolates is given in accordance to the Labels, IDs and Accession numbers from the table S1. The four SNVs columns correspond to the total number of SNVs in genes, number of SNVs in 5' and 3' UTRs, and the number of SNVs in intergenic regions (IGR). The eight columns named **INDELs** include number of deletions at the 5' end (at **first 15** genome positions, where most of the isolates are empty); the length and position of long insertions and long deletions (longIns, longDel), both absolute for the isolate in question and relative to the CLUSTAL output; number and length of short insertions and short deletions (shortIns, shortDel) in the form *axb* where *b* denotes the length and a the number of occurrences, along with their absolute and relative positions; number of deletions at the 3' end (3'del) and the length of a poly-a sequence at the 3' corresponds to the nine loci nucleotides that are given in the form NNNN/NNNN and represent nucleotides at (relative to CLUSTAL output) positions 9420, 17604, 222274, 27891 and 3861, 9495, 11514, 21773, 26534, respectively (absolute Tor2 positions 9404, 17564, 22222, 27827 / 3852, 9479, 11493, 21721, 26477). The last column, Group, reflects the proposed grouping of isolates.

	IDENTIFICA	TION		SN	Vs						INDELs				CLASSIFI	CATION
Label	ID	Accession No.	Total	Gene s	5'/3' UTR	IG R	5' Del -first 15	5' Del -follow.	longIns	longDel	shortIns	shortDel	3'del	3'poly-a	Туре	Group
1,2	Tor2	Nc_004718.3	2	2	-/-	-	-	-	-	-	-	-	-	24	tttt/ttcgt	A1
3	Urbani	Ay278741.1	5	5	-/-	-	-	-	-	-	-	-	-	-	tttt/ttcgt	A1
4	CUHK-W1	Ay278554.2	9	8	-/-	1	15	-	-	-	-	-	-	24	cgcc/ttcat	B1
5	BJ01	Ay278488.2	12	11	-/-	1	15	4	-	-	-	-	-	17	cgcc/ttcat	B1
6	BJ02	Ay278487.3	22	22	-/-	-	-	-	-	-	-	-	-	18	cgcc/ttcat	B1
7	BJ03	Ay278490.3	22	22	-/-	-	4	-	-	-	-	-	-	17	cgcc/ttcat	B1
8,9	NS-1(BJ04)	AY508724.1	15	14	-/-	1	15	1	-	-	-	-	-	21	tgcc/ttcgt	B1
10	GD01	Ay278489.2	49	49	-/-	-	15	1	29 (27868/ 27995)	-	-	-	-	17	cgcc/tccat	B2
11	HKU-39849	Ay278491.2	9	9	-/-	-	-	-	-	-	-	-	-	15	tttt/ttcgt	A1
12	CUHK- Su10	Ay282752.2	2	1	-/-	1	15	-	-	-	-	-	-	24	tttt/ttcgg	A1
13	Sin2500	Ay283794.1	2	2	-/-	-	15	1	-	-	-	-	-	-	tttt/ttcgt	A1
14	Sin2679	Ay283796.1	2	2	-/-	-	15	1	-	-	-	-	-	-	tttt/ttcgt	A1
15	Sin2774	Ay283798.2	4	4	-/-	-	15	1	-	-	-	-	-	-	tttt/ttcgt	A1
16	Sin2677	Ay283795.1	3	3	-/-	-	15	1	-	-	-	1x6 (27766 / 27893)	-	-	tttt/ttcgt	A1
17	Sin2748	Ay283797.1	1	1	-/-	-	15	1	-	-	-	1x5 (27794 / 27921)	-	-	tttt/ttcgt	A1
18	Frankfurt 1	Ay291315.1	7	7	-/-	-	-	-	-	-	-	-	-	-	tttt/ttcgt	A1
19	FRA	Ay310120.1	7	7	-/-	-	-	-	-	-	-	-	-	13	tttt/ttcgt	A1
20	ZJ01	Ay297028.1	23	23	-/-	-	14	-	-	-	7x1 (8548,12975, 13374,13450, 13462,15558, 27734 / 8612,13051, 13451,13527, 13539,15644, 27853)	2x1 (15526, 28465 / 15611, 28613 /)	3	-	ttt/ttogt	B4
21	SZ3	Ay304486.1	54	53	-/1	-	15	-	29 (27869 / 27995)	-	-	-	-	-	cgcc/tccat	B2
22	SZ16	Ay304488.1	55	55	-/-	-	15	-	29 (27869 / 27995)	-	-	-	10	-	cgcc/tccat	B2
23	GZ50	Ay304495.1	11	10	-/1	-	15	-	-	-	-	-	-	8	tgcc/ttcat	B1
24	GD69	Ay313906.1	21	21	-/-	-	-	-	-	-	1x1 (14295 / 14370), 1x10 (20374/ 20456)	-	-	16	tttt/cttgg	A1
25	TWC	Ay321118.1	2	2	-/-	-	-	-	-	-	-	1x2 (27806 / 27919)	-	-	tttt/ttcgt	A1
26	HSR 1	Ay323977.2	0	0	-/-	-	-	-	-	-	-	-	-	24	tttt/ttcgt	A1
27	Taiwan TC1	Ay338174.1	4	4	-/-	-	15	54	-	-	-	-	85	-	tttt/cttgg	A1
28	Taiwan TC2	Ay338175.1	9	9	-/-	-	15	54	-	-	-	-	85	-	tttt/cttgg	A1
29	Taiwan TC3	Ay348314.1	7	6	-/-	1	15	54	-	-	-	-	85	-	tttt/cttgg	A1

	IDENTIFICA	TION		SN	Ws						INDELs				CLASSIFI	CATION
Label	ID	Accession No.	Total	Gene s	5'/3' UTR	IG R	5' Del -first 15	5' Del -follow.	longIns	longDel	shortIns	shortDel	3'del	3'poly-a	Туре	Group
30,31	CUHK- AG01(02)	AY345986.1	3	3	-/-	-	15			-	-		-	24	tttt/cttgg	A1
32	CUHK- AG03	AY345988.1	5	4	-/-	1	15	-	-	-	-	-	-	24	tttt/cttgg	A1
33	PUMC01	AY350750.1	3	2	-/-	1	13	-	-	-	-	-	-	24	tttt/ttcgg	A1
34	PUMC02	AY357075.1	2	1	-/-	1	14	-	-	-	-	1x2 (27869 / 27994 (1), 28024 (1))	-	27	tttt/ttcgg	A1
35	PUMC03	AY357076.1	4	3	-/-	1	14	-	-	-	-	1x3 (26142 / 26260)	-	35	tttt/ttcgg	A1
36	ZMY 1	Ay351680.1	78	77	1/-	-					24x1 (1031, 1041, 1053, 2521, 2528, 3850, 4220, 4826, 6339, 6426, 7798, 8084, 11729 11782, 14063, 14113, 14134,14177, 14261, 14271, 19118, 20692, 22750, 25301 / 1067, 1077, 1089, 2558, 2565, 3887, 4257, 4863, 6377, 6464, 7836, 8122, 11777,11830, 14120, 14170, 14191,14234, 14318, 14328, 19178,20766, 22825,25381)	2x1 (10601, 10609 / 10642, 10651) 1x2 (28734 / 28852)	-	2	tttt/ttcgt	B4
37,38	TWH (TWC2)	Ap006557.1	4	4	-/-	-	-	-	-	-	-	-	-	-	tttt/cttgg	A1
39	TWK	Ap006559.1	7	7	-/-	-	-	-	-	-	-	-	-	-	tttt/cttgg	Al
40	TWS	Ap006560.1	6	6	-/-	-	-	-	-	-	-	-	-	-	tttt/cttgg	Al
41	TWY	Ap006561.1	6	6	-/-	-	-	-	-	-	-	-	-	-		Al
42	TWC3	Ay362699.1	3	3	-/-	-	-	-	-	-	-	-	-	-	tttt/cttgg	Al
43	TWJ	Ap006558.1	6	6	-/-	-	-	-	-	-	-	1x2 (27167 / 27271)	-	-	tttt/cttgg	Al
44	GZ02	AY390556.1	39	39	-/-	-	-	-	29 (27884 / 27995)	-	-	-	-	4	cgcc/tccat	B2
45	WHU	Ay394850.2	15	15	-/-	-	-	-	-	-	-	1x2 (27808 / 27919)	-	3	tttt/ttcgt	A1
46	HZS2-D	AY394989.1	5	5	-/-	-	15	-	-	-	-	-	-	24	tgcc/ttcat	A1
47	HZS2-E	AY394990.1	5	5	-/-	-	15	-	-	-	-	-	-	24	tgcc/ttcat	A1
48	HZS2-Fc	AY394991.1	6	6	-/-	-	15	-	-	-	-	-	-	24	tgcc/ttcgt	A1
49	HZS2-C	AY394992.1	7	7	_/	-	15	-	-	-	-	-	-	24	tgcc/ttcat	A1
50	HGZ8L2	AY394993.1	7	7	-/-	-	15	-	-	-	-	-	-	24	tgcc/ttcat	A1
51	LC1	AY394998.1	1	1	-/-	-	15	-	-	-	-	-	-	24	tttt/ttcgg	A1
52	GZ-B	AY394978.1	3	3	-/-	-	15	57	-	39 (27699 / 27882)	-	-	-	24	tttt/ttcgt	A3

	IDENTIFICA	TION		SN	Ws						INDELs				CLASSIFI	CATION
Label	ID	Accession No.	Total	Gene s	5'/3' UTR	IG R	5' Del -first 15	5' Del -follow.	longIns	longDel	shortIns	shortDel	3'del	3'poly-a	Туре	Group
53	GZ-C	AY394979.1	14	14	-/-	-	15	37	-	39 (27719 / 27882), 12 (28039 / 28273)	-	1x3 (27791 / 27993 (2), 28024 (1))	-	24	cttt/ttcgt	A3
54	HSZ2-A	AY394983.1	5	5	-/-	-	15	37	-	-	-	-	-	24	tgcc/ttcat	A1
55	HZS2-Fb	AY394987.1	5	5	-/-	-	15	27	-	-	-	-	-	24	tgcc/ttcgt	A1
56	HSZ-Bb	AY394985.1	14	14	-/-	-	15	235	29 (27634 / 27995)	-	-	-	-	24	cgcc/tccat	B2
57	HSZ-Cb	AY394986.1	16	16	-/-	-	15	36	29 (27833 / 27995)	-	-	-	-	24	cgcc/tccat	B2
58	HSZ-Bc	AY394994.1	13	13	-/-	-	15	-	29 (27869 / 27995)	-	-	-	-	24	cgcc/tccat	B2
59	HSZ-Cc	AY394995.1	19	19	-/-	-	15	-	29 (27869 / 27995)	-	-	-	-	24	cgcc/tccat	B2
60,61	ZS-A (ZS- B)	AY394997.1	38	38	-/-	-	15	-	-	53 (27843 / 27969 (26), 28024 (27))	-	-	-	24	cgcc/tccat	B3
62	ZS-C	AY395003.1	38	38	-/-	-	15	36	-	53 (27807 / 27969 (26), 28024 (27))	-	-	-	24	cgcc/tccat	B3
63	LC2	AY394999.1	4	4	-/-	-	15	-	-	386 (27704 / 27829)	-	-	-	24	ttt-/ttcgt	A3
64,65	LC4 (LC3)	AY395001.1	3	3	-/-	-	15	-	-	386 (27704 / 27829)	-	-	-	24	ttt-/ttcgt	A3
66	LC5	AY395002.1	4	4	-/-	-	15	-	-	386 (27704 / 27829)	-	-	-	24	ttt-/ttcgt	A3
67	AS	Ay427439.1	0	0	-/-	-	15	1	-	-	-	-	-	-	tttt/ttcgt	A1
68	SoD	AY461660.1	30	10	1/19	-	15	-	-	-	-	-	-	-	tttt/ttcgt	A1
69	ShanghaiQX C1	AY463059.1	39	39	-/-	-	15	64	-	-	-	-	56	-	cgtt/ttcgt	B1
70	ShanghaiQX C2	AY463060.1	39	39	-/-		15	64		579 (5834 / 5959 (418), 6378 (86), 6465 (75))			56		cgtt/ttcgt	B1
71	Sino1-11	AY485277.1	6	6	-/-	-	-	-	-	-	-	1x3 (26156 / 26260)	-	17	tttt/ttcgg	A1
72	Sino3-11	AY485278.1	3	3	-/-	-	-	-	-	-	-	1x2 (27883 / 27994 (1), 28024 (1))	-	15	tttt/ttcgg	A1
73,74	TW2 (TW1)	Ay502925.1	1	1	-/-	-	-	-	-	-	-	-	-	2	tttt/ttcgt	A1
75	TW3	AY502926.1	2	2	-/-	-	-	-	-	-	-	-	-	2	tttt/ttcgt	A1
76	TW4	AY502927.1	2	2	-/-	-	-	-	-	-	-	-	-	2	tttt/ttcgt	A1
77	TW5	AY502928.1	1	1	-/-	-	-	-	-	-	-	-	-	2	tttt/ttcgg	A1
78	TW6	AY502929.1	3	3	-/-	-	-	-	-	-	-	-	-	2	tttt/cttgg	A1
79	TW7	AY502930.1	4	4	-/-	-	-	-	-	-	-	-	-	2	tttt/cttgg	A1
80	TW8	AY502931.1	3	3	-/-	-	-	-	-	-	-	-	-	2	tttt/cttgg	A1
81	TW9	AY502932.1	5	4	-/-	1	-	-	-	-	-	-	-	2	tttt/cttgg	A1
82	TW10	AY502923.1	6	5	-/-	1	-	-	-	-	-	-	-	2	tttt/cttgg	A1
83	TW11	AY502924.1	9	8	-/-	1	-	-	-	-	-	1x2 (27068 / 21172)	-	2	tttt/cttgg	A1
84	Sin842	AY559081.1	4	4	-/-	-	13	-	-	-	1x1 (13953 / 14034)	-	-	1	tttt/ttcgt	A1
85	Sin852	AY559082.1	19	9	10/-	<u> </u>	1	-	-	57 (27797 /	-	-	-	1	ttt-/ttcgt	A3

	IDENTIFICA	TION		SN	Ws						INDELs				CLASSIFI	CATION
Label	ID	Accession No.	Total	Gene	5'/3'	IG	5' Del	5' Del	longIns	longDel	shortIns	shortDel	3'del	3'poly-a	Туре	Group
				s	UTR	R	-first 15	-follow.								
										27909)				_		
86	Sin3765V	AY559084.1	9	9	-/-	-	15	1	-	-	-	-	-	11	tttt/ttcgt	A1
87	Sin848	AY559085.1	11	11	-/-	-	15	1	-	-	-	-	-	2	tttt/ttcgt	A1
88	Sin849	AY559086.1	4	4	-/-	-	15	1	-	49 (27745 / 27872)	-	-	1	-	tttt/ttcgt	A3
89	Sin846	AY559094.1	7	7	-/-	-	15	1	-	137 (27663 / 27787 (66), 27854 (71)	2x1 (9567, 9667 / 9634, 9734)	-	-	1	tttt/ttcgt	A3
90	Sin3725V	AY559087.1	4	4	-/-	-	15	1	-	-	-	-	-	5	tttt/ttcgt	A1
91	SinP1	AY559088.1	4	4	_/_	-	15	1	-	-	2x1	-	-	1	tttt/ttcgt	A1
							10	-			(2488, 25277 / 2543, 25394)					
92	SinP3	AY559090.1	9	4	1/4	-	15	1	-	-	2x2, (10, 25286 / 60, 25394) 9x1 (10651,10697,11 112,11567, 11782,11933,119 88,22506, 29716 / 10718,10764,111 79,11634, 11852,12003,120 58,22607, 29860)	-	-	1	tttt/ttogt	A4
93	SinP5	AY559092.1	4	4	-/-	-	15	1	-	-	29800) 1x2 (25276 / 25304)	1x1(28088 / 28242)	-	1	tttt/ttcgt	A1
94	SinP4	AY559091.1	7	4	-/3	-	15	1	-	-	1x2 (25274 / 25394)	2x1 (24085, 24106 / 24201, 24223)	1	-	tttt/ttcgt	A1
95	Sin845	AY559093.1	10	10	-/-	-	15	1	-	-	-	-	-	1	tttt/ttcgt	A1
96	Sin847	AY559095.1	12	10	2/-	-	10	-	-	-	-	-	-	2	tttt/ttcgt	A1
97	Sin850	AY559096.1	11	6	5/-	-	8	-	-	-	-	-	-	1	tttt/ttcgt	A1
98	LLJ-2004	AY595412.1	11	10	-/-	1	15	6	-	-	1x6 (27637 / 27763)	1x1 (2919 / 2982)	-	5	cgcc/ttcat	B1
99	TJF	AY654624.1	17	10	2/1	4	1	-	-	-	-	-	-	19	tgcc/ttcgt	B1
100	CDC#20030 1157	AY714217.1	2	2	-	-	-	-	-	-	-	-	-	-	tttt/ttcgt	A1
101	Sin3408L	AY559097.1	4	4	-	-	15	1	-	-	1x1 (5120 / 5181)	2x1 (24524, 25029 / 24639, 25145)	-	5	tttt/ttcgt	A1
102	SinP2	AY559089.1	4	4	-	-	15	1	-	-	13x1 (10649,11638,13 060,17980, 19282,19497,199 28,20029, 23499,23543,235 89,23607, 25127 / 10718,11710,131 38,18071, 19374,19589,200	5x1 (16584, 25141, 25144, 25169, 25171 / 16674, 25246, 25250, 25276, 25279), 1x6 (25189 / 25298)	-	2	tttt/ttcgt	A4

	IDENTIFICA	TION		SN	Ws						INDELs				CLASSIFIC	CATION
Label	ID	Accession No.	Total	Gene	5'/3'	IG	5' Del	5' Del	longIns	longDel	shortIns	shortDel	3'del	3'poly-a	Туре	Group
				s	UTR	R	-first 15	-follow.								_
											20,20121,					
											23604,23648,236					
											94,23712,					
											25232),					
											1x2 (25278 /					
											25394)					
103	Sin3408	AY559083.1	14	4	10/-	-	-	-	5'end (34)	-	-	-	-	6	tttn/ttcgt	A1

a.a.	codon	TOTAL	Spike	Envel.	Membr.	Nucleo.	1AB	Other
Ala	gca	1.11	0.86	0.00	0.63	1.06	1.16	1.32
	gcc	0.59	0.57	1.00	0.84	0.94	0.55	0.54
	gcg	0.24	0.24	2.00	0.42	0.35	0.2	0.40
	gct	2.07	2.33	1.00	2.10	1.65	2.09	1.74
Arg	aga	2.09	1.85	0.00	0.80	1.94	2.22	2.20
	agg	0.97	1.85	0.00	0.80	0.39	0.85	1.68
	cga	0.47	0.61	3.00	0.80	1.16	0.26	1.13
	cgc	0.76	0.46	0.00	1.20	1.55	0.76	0.15
	cgg	0.12	0.15	0.00 3 00	0.60	0.00	0.07	0.24
Aan	Cyi	0.75	0.60	3.00	1.00	0.37	1.85	0.00
ASII	aat	0.75 1 25	0.09	0.80 1 20	0.77	1.28	0.74	0.93
Asp	020	0.75	0.63	0.00	1.67	1.20	0.70	1.07
дэр	gac	1 25	1.37	2 00	0.33	0.91	1.72	0.79
Cvs	tac	0.75	0.93	1 33	0.32	0.00	0.60	1.06
CyS	tat	1.25	1.07	0.67	1.68	2.00	1 31	0.94
Gln	саа	1.21	1.60	0.00	1.20	1.41	1.31	1.13
0	caq	0.79	0.40	0.00	0.80	0.59	1.01	0.87
Glu	gaa	1.05	1.00	2.00	1.15	1.00	0.69	0.79
	gag	0.95	1.00	0.00	0.85	1.00	1.1	1.21
Gly	gga	0.91	1.01	2.00	0.80	1.42	0.9	0.71
	ggc	1.01	1.26	0.00	0.80	1.42	1.07	1.38
	<u>ggg</u>	0.18	0.20	0.00	0.80	0.27	0.14	0.18
	ggt	1.9	1.52	2.00	1.60	0.89	2.11	1.73
His	cac	0.71	0.27	0.00	2.00	0.80	0.68	1.05
	cat	1.29	1.73	0.00	0.00	1.20	1.32	0.95
lle	ata	0.66	0.54	1.00	0.50	0.28	0.65	1.05
	atc	0.63	0.35	1.00	0.33	0.81	0.72	0.51
	att	1.7	2.11	1.00	2.17	1.91	1.62	1.44
Leu	cta	0.69	0.61	0.86	1.16	1.15	0.6	1.15
	CtC	0.82	1.15	0.00	1.15	0.69	0.8	0.69
	cig	0.59	2.06	0.00 2.57	0.56	0.92	0.62	0.60
	tta	1.70	1 15	0.86	0.58	0.23	1.70	0.98
	tta	1.08	0.79	0.86	0.97	1.38	1.11	1.13
Lvs	aaa	1.06	1.13	2.00	1.33	1.38	1.11	1.03
_,-	aag	0.94	0.87	0.00	0.67	0.62	0.97	0. 97
Met	atg	1	1.00	1.00	1.00	1.00	1	1.00
Phe	ttc	0.76	0.58	1.49	1.04	1.39	0.78	0.68
	ttt	1.24	1.42	0.51	0.96	0.61	1.22	1.32
Pro	сса	1.7	1.33	2.00	2.32	1.29	1.79	1.91
	CCC	0.41	0.22	0.00	0.06	1.16	0.37	0.51
	ccg	0.17	0.14	0.00	0.83	0.26	0.12	0.49
	cct	1.72	2.31	2.00	0.79	1.29	1.72	1.08
Ser	agc	0.53	0.38	0.86	1.00	0.86	0.47	1.06
	agt	1.13	0.69	0.86	0.50	1.20	1.28	0.69
	tca	1.76	1.75	0.86	2.00	1.54	1.75	2.24
		0.41	0.44	1 71	0.50	0.51	0.4	0.25
	tet	1.92	2 56	1 71	1 00	1 71	1 02	1 01
Thr	303	1 56	1 40	1 60	1 54	1 34	1.92	1 30
	acc	0.55	0.48	0.00	0.92	0.61	0.54	0.65
	acg	0.19	0.16	1.60	0.31	0.00	0.16	0.44
	act	1.69	1.86	0.80	1.24	2.06	1.67	1.60
Trp	tgg	1	1.00	0.00	1.00	1.00	1	1.00
Tyr	tac	0.88	0.67	1.99	1.33	1.64	0.86	0.88
	tat	1.12	1.33	0.01	0.67	0.36	1.14	1.12
Val	gta	0.85	0.53	0.86	1.25	0.36	0.9	0.83
	gtc	0.69	0.83	0.79	0.50	1.46	0.67	0.40
	gtg	0.79	0.57	0.57	1.50	0.73	0.79	1.01
<u> </u>	gtt	1.68	2.07	1.78	0.76	1.46	1.64	1.75
End	taa	1.98	3.00	3.00	3.00	3.00	0.93	1.85
	tag	0.42	0.00	0.00	0.00	0.00	0.85	0.22
	tga	0.6	0.00	0.00	0.00	0.00	0.9	0.94

Table S3. RSCU for all the annotated proteins and in total, for all the annotated isolates.The highest RSCU synonumous codons are in bold

Table S4. Positions of multiple SNVs in annotated isolates. Positions of two or more SNVs are presented along with nucleotides and ORFs (based on HSR 1 annotation), type of mutation (transition / transversion), a.a. position in ORF, a.a. change, a.a. properties change, nucleotide position in codon and the number of SNVs. SNVs are in red.

	1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab	1ab 1ab	1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab 1ab	1ab	1ab 1ab	1ab 1ab	S 1ab	s s	v v v	o o o	<u>v v v</u>	<u>م</u> م	S ORF3	ORF3 ORF3	ORF3 ORF3	ORF3 E	ш ш Σ	<u><u> </u></u>	M ORF6	ORF6 ORF8	ORF8a ORF8b	z
Nucleotide position on HSR 1 scale	508	969 1782	2557 3165	3332 3626	3852 4033	4220 4345	4417 4806	5633 6612 6929	7241 7438	7445 7703 7919	8206 8391	8436 8559 8815	8943 8946 9072	9095 9176	9404 9479	9854	10029 10587 11414	11448 11493	11995	12868	13347 13638	16890 17131	17903	18965 19064 19084	19684 19838 20424	21479 21721	22145 22207	22222 22422 22422	22522	23304 23313 23823	24566 24886	24933 25298	25353	25844 25931	26032 26129	262U5 26249 26477	26600	26753	27243 27812	27827 28089	28268
Nucleotide position on relative scale	510	971 1787	2565 3173	3340 3634	3861 4042	4230 4355	4427 4816	5644 6625 6942	7254 7451	7716 7933	8221 8406	8451 8574 8831	8959 8962 9088	9111 9192	9420 9495	9872	10047 10605 11435	11469 11514 11704	12021 12632	12895	13375 13669	16930 17171 17604	17943	19005 19104 19124	19725 19879 20475	21531 21773 21773	22197 22259	22274 22474 22570	22575 23274 23274	23358 23367 23877	24620 24940	24987 25355	25410 25836	25901 25988	26089 26186	2626U 26306 26534	26657 26793	26810 27148	27300 27876	27891 28182	28361
PROFILE	G	G C	G A	T T	TA	A A	A T	A G G	T C	G T C	A T	T T C		C T ·	T T T	C	G A T		A T	G A	C G	C T	TA	T A C	AA	T C G	T C	T G A	A T	G A T	T A	C G	TA	A G	TG	C A T	C A	TC		T C	C
gi 30275666 gb AY278488.2 BJ01	G	G C	G A			A A		A G G		G T C						- I - T				G A	C G				A G					G A I		C G		A G							
gi 49176846 gb A1595412.1 LLJ-2004	G		GA			A A														GA										G A I				A G					$\frac{1}{1}$		
gij41323719jgbjA1390330.1jG202	T		G A	ТС	ТА				ТС	G T C				ТС		C				G A							C T						ТС								
ail30027610lablAY278554.2ICUHK-W1	G	G C	G A	ТТ	ТА		AT	A G G	тс	G T C	A T	T T C		СТ	г с с	C	G A T			G A	C G	C T (G A ·	T G C		г с А	T C	C G A		G A T	TA	C G	ТА	A G	TG					C C	C C
ail40795744lablAY508724.1INS-1	G	G C	G A	ТТ	ТА	AA	AT	A G G	тс	G T C	A T	ттс		СТ	ттт	т	G A T			G A	C G	C T (G A ·	T A C	A G	T C G	T C	C G A		G A T	TA	C G	ТА	A G	TG				T C	C C	C C
gi 50365700 gb AY654624.1 TJF	G	GC	G A	ТТ	TA	A A	AT	A G G	ТС	G T T	A T	ттс	ТТТТ	СТ	г т т	T	G A T		AT	G A	CG	C T (G A ·	T A C		T C G	T C	C G A	AT	G A T	T A	C A	ТА	A G	TG	CAT	C A	TC	T C	C C	C
gi 30271926 ref NC_004718.3 Tor2	G	G C	G A	ТТ	ТА	A A	A T	A G G	ТС	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	ссо	AT	G A	CG	С Т .	ГА.	ТАС	A A 1	г С С	т с	T G A	A A G	G A T	ТА	C A	ТА	A G	T G	CAT	СА	. т с	; <u> </u>	тс	С
gi 38505491 gb AY485278.1 Sino3-11	G	G C	G A	ТТ	ТА	A A	A T	A G G	ТС	G T C	A T	т т с	ттт	С Т .	т т т	С	G A T	ссо	A T	G A	C G	С Т .	ГА.	ТАС	AA	T C G	т с	T G A	АТ	G A T	ТА	C G	ТА	A G	ТТ	C A C	C A	. т с	; с с	ТС	С
gi 38505482 gb AY485277.1 Sino1-11	G	G C	G A	ТТ	ТА	A A	A T	A G G	T C	G T C	A T	т т с	т т т	C T ⁻	т т т	С	G A T	ССО	A T	G A	C G	TT	ГА.	T A C	AA	T C G	т с	T G A	AT	G A T	ТА	C G	ТА	A G	T G	C T G	СА	ТС	; с с	ТС	С
gi 33115118 gb AY323977.2 HSR 1	G	G C	G A	ТТ	ТА	A A	A T	A G G	ТС	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	ССС	A T	G A	C G	С Т .	ТА	T A C	A A T	T C G	т с	T G A	A T	G A T	ТА	C G	ТА	A G	TG	C A T	C A	ТС	с с	ТС	С
gi 38231932 gb AY357075.1 PUMC02	G	G C	G A	ТТ	ТА	A A	A T	A G G	ТС	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	C C (A T	G A	C G	С Т .	ΓА	T A C	AA	T C G	т с	T G A	A T	G A T	ТА	C G	ТА	A G	тт	C A G	C A	ТС	СС	ТС	С
gi 38231937 gb AY357076.1 PUMC03	G	G C	G A	ТТ	ТА	A A	A T	A G G	T C	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	C C (A T	G A	C G	ТТ	T A '	T A C	A A	T C G	ТС	T G A	A T	G A T	T A	C G	ТА	A G	T G (C T G	C A	ТС	, <u>C</u> C	ТС	С
gi 38304867 gb AY282752.2 CUHK-Su10	G	G C	G A	T T	ТА	A A	A T	A G G	T C	G T C	A T	т т с	ттт	С Т .	т т т	С	G A T	C C (A T	G A	C G	C T ·	T A '	T A C	AA	T C G	ТС	T G A	A T	G A T	T A	C G	TA	A G	T G (C A G	C A	ТС	C C	ТС	С
gi 38231927 gb AY350750.1 PUMC01	G	G C	G A	T T	TA	A A	A T	A G G	T C	G T C	A T	T T C	T T T	C T	T T T	С	G A T	C C (A T	G A	C G	C T ·	T A	T A C	AA	T C G	T C	T G A	A T	G A T	T A	C G	TA	A G	TG	C A G	C A	T C	СС	T C	C
gi 33114214 gb AY345988.1 CUHK-AG03	G	G C	G A	TT	C A	A A		A G G	T C	G T C	A T	T T C		C T		C	G A T		A T	G A	C G	C T		T A C			T C	T G A	AAT	G A T	TA	C G	TA	A G	TG	C A G		TC		T C	C
gi 33114190 gb AY345986.1 CUHK-AG01	G		G A			A A		A G								C	G A T			G A										G A T				A G							
gij31561502jgbjA1291315. ijFlanklutt 1	G			ТТ											<u>, , , ,</u> т т т	C				G A							T C							A G						TC	
gil40457433lgblAY463059.1lShanghaiQXC1	G	A C	G A	СТ	TG	A G	GC	GGG	СТ	A C C	TA	C T C		СТ	сст	Т	G A C		GC	A G	C A	C T (G G	T A C	GGG		тс	T G A	A G	A G T	T G	C G	C A		TG					тс	- c
gi 40457448 gb AY463060.1 ShanghaiQXC2	G	A C	G A	C T	TG	A G	GC	G G G	C T	A C C	T A	C T C	C T C	C T (ССТ	T	G A C		GC	A G	C A	C T (G G	T A C	GGG	CG	T C	T G A	A A G	A G T	T G	C G	C A	AA	TG	C A T	C C			ТС	C
gi 37576845 gb AY427439.1 AS	G	G C	G A	ТТ	ТА	A A	A T	A G G	ТС	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	ссо	A T	G A	C G	С Т .	ГА.	т а с	A A 1	г С С	т с	T G A	АТ	G A T	ТА	C G	ТА	A G	T G	C A T	C A	тс	; с с	ТС	С
gi 40548981 gb AY502932.1 TW9	G	G C	G A	ТТ	C A	A A	A T	A G G	ТС	G T C	A T	т т с	т т т	СТ	т т т	С	G A T	C T (A T	G A	C G	СТ	ТА.	T A C	A A T	T C G	т с	T G A	A T	G A T	ТА	C G	ТА	A G	T G	T A G	СА	т с	C T	ТС	С
gi 40548885 gb AY502924.1 TW11	G	G C	G A	ТТ	C A	A A	A T	A G G	ТС	G T C	A T	т т с	т т т	СТ	т т т	С	G A T	C T (A T	G A	C G	С Т .	ТА	T A C	A A T	T C G	т с	T G A	A T	G A T	ТА	C G	ТА	A G	TG	T A G	C A	ТС	C T	ТС	С
gi 40548873 gb AY502923.1 TW10	G	G C	G A	ТТ	C A	A A	A T	A G G	ТС	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	C T (A T	G A	T G	C T .	ГА	T A C	AA	T C G	ТС	T G A	A T	G A T	ТА	C G	ТА	A G	T G '	T A G	C A	ТС	, C T	ТС	С
gi 33411459 dbj AP006561.1 TWY	G	G C	G A	ТТ	C A	A A	A T	A G G	T C	G T C	A T	т т с	ттт	С Т '	т т т	С	G A T	C T (A T	G A	T G	С Т .	T A '	T A C	A A T	T C G	ТС	T G A	A T	G A T	T A	C G	TA	A G	TG	T A G	C A	ТС	C T	ТС	С
gi 33411429 dbj AP006559.1 TWK	G	G C	G A	T T	C A	A A	A T	A G G	T C	G T C	A T	т т с	ТТТ	C T ·	ТТТ	С	G A T	C T (A T	G A	C G	СТ	T A	T A C	A A	T C G	T C	T G A	A T	G A T	T A	C G	TA	A G	T G	T A G	C A	T C	C T	T C	С
gi 33411414 dbj AP006558.1 TWJ	G	G C	G A	TT	C A	A A		A G G	TC	G T C	A T	T T C		C T		C	G A T			G A	C G	C T		T A C			T C	T G A	AAT	G A T	TA	C G	TA	A G	T G	T A G		TC		T C	C
gi 33411444 dbj AP006560.1 TWS	G		G A			A A		A G G								C	G A T			G A										G A I				A G		T A G					
gij33166324jgbjA1346314. i Taiwan TC3	G		G A	ТТ											<mark>г г г</mark>	C				G A							T C							A G	TG					TC	
gij02400100jgbj/1000110.111aiwan TC1	G	G C	G A	ТТ	C A	AA		A G G	тс	G T C	A T	ттс		СТ	т т т	C	G A T			G A	C G	C T ·	т а '	T G C		T C G	тс	T G A		G A T	TA	C G	ТА	A G	TG					тс	C C
gi 40548957 gb AY502930.1 TW7	G	G T	G A	ТТ	C A	A A	A T	A G G	ТС	G T C	A T	ттс	ТТТ	СТ	г т т	С	G A T	C T (A T	G A	CG	СТ	Г А	T A C	AA	T C G	T C	T G A	AT	G A T	T A	C G	ТА	A G	TG	C A C	C A	ТС		ТС	C
gi 33411399 dbj AP006557.1 TWH	G	GT	G A	ТТ	C A	A A	A T	A G G	ТС	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	C T (AT	G A	C G	С Т .	ГА.	ТАС	A A 1	г С С	т с	T G A	ААТ	G A T	ТА	C G	ТА	A G	T G	C A C	СА	. т с	; с с	тс	С
gi 40548969 gb AY502931.1 TW8	G	G C	G A	ТТ	C A	A A	A T	A G G	ТС	G T C	A T	т т с	т т т	СТ	т т т	С	G A T	C T (A T	G A	C G	СТ	ГА.	T A C	A A T	T C G	т с	T G A	A T	G A T	ТА	C G	ТА	A G	T G	C A C	C A	ТС	, с с	ТС	С
gi 40548945 gb AY502929.1 TW6	G	G C	G A	ТТ	C A	A A	A T	A G G	ТС	G T C	A T	т т с	т т т	С Т .	т т т	С	G A T	C T (A T	G A	C G	C T .	T A '	T A C	AA	T C G	т с	T G A	A T	G A T	ТА	C G	ТА	A G	T G	C A G	СА	ТС	, с с	ТС	С
gi 40548933 gb AY502928.1 TW5	G	G C	G A	ТТ	ТА	A A	A T	A G G	т с	G T C	A T	т т с	ттт	СТ	т т т	С	G A T	ссо	A T	G A	C G	С Т .	ТА.	ТАС	A A T	T C G	т с	T G A	АТ	G A T	ТА	C G	ТА	A G	TG	C A G	СА	тс	, с с	ТС	С
gi 30027617 gb AY278741.1 Urbani	G	G C	G A	ТТ	ТА	A A	A T	A G G	T C	G T T	A T	т т с	ттт	СТ	т т т	С	G A T	C C (A T	G A	C G	СТ.	T A '	T <mark>G</mark> C	A A	T C G	ТС	T G A	A T	G A T	T A	C G	ТА	A G	T G (C A T	C A	ТС	, <u> </u>	ТС	С
gi 40548921 gb AY502927.1 TW4	G	G C	G G	T T	TA	A A	A T	A G G	T C	G T C	A T	т т с	ТТТ	C T ·	Т Т Т	С	G A T	C C (A T	G A	C G	СТ.	T A .	T A C	A A	T C G	ТС	T G A	A T	G A T	T A	C G	TA	A G	TG	C A T	C A	TT	СС	T C	С
gi 40548909 gb AY502926.1 TW3	G	G C	G G	T T	TA	A A	AT	A G G	TC	G T C	A T	T T C		C T		С	G A T			G A	C G	C T		T A C		T C G	T C	T G A	A A T	G A T	T A	C G	TA	A G	TG			TT		T C	C
gi 40548897 gb AY502925.1 TW2	G		G G			A A		A G G									G A T			G A										G A T				A G					$\frac{1}{2}$		
gi.52546959[AT714217.1]CDC#200301157	6	3 0	G A																	G A												e -									
	>Cys		>Thr	Thr Th	>Glu	>Arg >Ala	Val	>Gly	>Ala	>His	⇒Tyı			>Ile	>Ala	>Val	>Ala		>Val	>Gly	<u>e</u>	>Sel	j N	<u>⊸</u>	>Se	SASF	>Let	Thr >Arg	>Arg >Ala	->Asi >Ala	- Gly	>Ph	>Ala	>Trp	Phe	>Tyi	>Val	>Prc	>Let	⇒Arç	≥ e
a.a. changes	Gly-	Glu Cys	Ala-: Ser	lle->	Ser Lys-	Lys- Thr-:	Thr	Glu- Leu- Cys-	Val-: Arg-	Arg- Leu- Ala-:	Asn- Ala	Thr Tyr Leu	Ala Ala Gly	Thr-	Val-	Ala-:	Gly Thr Val-:	Tyr Te	Met- Val-:	Val-: Glu-	Asp Val-:	Pro-	Arg	Glu	Asn- Val	Asn Gly-	Pro Ser-	Gly-:	Lys- Ser-	Asp- Thr-: Tyr-:	Cys Glu-	Leu-Gly-:	Val-: Glu-	Arg- Asp-	Ala Val-	Vai Asn-	Ala-:	Leu-	Pro-	Cys- Leu-	Thr
	0	35 06	35)23 121	257	319 361	385	790 116 222	326 392	394 180 552	348			944 971)47)47)72	197	717		911	202 296	159	543 523 523	10	274	174	12	39	11	44 77)5)8 78	132	148	5	93				6			
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	+S+c		S+c	က် ကိ	L NC	+PC	4Ap	⊢	L+S+	+PCF				d L+S	L+S+	s+Ap	T+S+		L+S	÷	AP			d				γ f	H PC	S+T S+T	÷	. 5		s tAr	+Ar	.+Ar	s+Ap			PC	đ
	+ 수		부수	+ H + G	i ⊥	H H H	÷S+O	p+Srd P+Ar	+d H + d	S+d-	P+AI					S+d	H H		A + A p	dH≁ dH*	ÅH	L+S+	F L	/+dH		L Ž +	p+Aţ	+D+D(L → → → → → → → → → → → →	+ d + d + d + d + d + d + d + d + d + d	s+q	D+Ar	H H H H H H H H H H H H H H H H H H H	-d+d	Hp+	IA+A	우 수			P+Ar	/+ 여
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	+S+	ent	o+S+ ent	+Ap	ent +P+	+ d + d +	o+Ap ent	-NCF	PCh	+S+	-S→ ent	ent ent	ent ent	+ d + 0	+S+0 +S+1	+S+0	ent +S+	ent	H + S+	+S+	ent +S+	+Ap	ent	ent +P+	ent ent	ent +S+	ent S+T	0+Ap	t d+c	-NCI +P+	ent NCh	+S+	NCh	NCL-PC	ent +S+	ent +P+	+S+)+Ap	→Hp	+P+	+ d +
a.a. properties changes	н		Н IS	표 표	ію Н	Ξ Ξ	H IS		Ξ ±		E IS			표 표 표	Ê H H	Ξ		100 100 100 100 100 100 100 100 100 100	포토	Ξ Å	is H	S H d		л III H		E IS H	is t	보보			i i i i i i i i i i i i i i i i i i i	표표					H IS	H IS	N III	표 표	<u> </u>
nosition in coden	1 1	15 Ts	1 7 Ts		IS TS	1s Ts 2 1	1 S Ts	1s Tv Ts		1s Ts Ts 2 2 2	1 2	IS TS TS 3 2 1	IS TV TS		s Ts Ts	1s 2	IS TV TS			1 D	1s Ts 3 1		v Ts 1 1 2 4	IV TS TS		s is Ts 1 2 2	Is Ts		s is Tv	1 1 1 1				1 1		3 TV TV	2 2	3 2	3 2		
		<u>→</u> →	- 3 ∢ ∩			<u> </u>																				<u>י י י</u> ע ו ו ע													<u>, </u>		·
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Number of SNVs	2		<u>≯ ∪</u> 2 2				2 2	2 2 2 2		$\frac{\mathcal{O}}{2} + \frac{\mathcal{O}}{2} + \frac{\mathcal{O}}{2}$	∢ ⊢ 2 2	$rac{1}{2}$			- <u> </u> <u> </u> 2 7 3	6			2 4 + 2 2 2 2 2 2 2 2 2	2 2	2 2	$\begin{array}{c c} \cup & \vdash & \vdash \\ \hline 2 & 2 & \downarrow \end{array}$	- V + a 2 4	$- \langle 0 \rangle$			$\frac{1}{2}$			<u>∪ </u>				$\frac{1}{2}$			3 2 2		$\frac{100}{50}$	$\frac{ }{7}$	$\frac{1}{2}$
			2 3	<u> </u>	10 2					- 1 - 1 - 0					- 1 / 1 3		- 1 - 1 - 2					- 1 - 1	- 1 - 1 -	- 1 - 1 - 2		- 1 - 1 - 1					4 4	2 2		- 1 -	<u> </u>		<u>, </u>		3		

 Table S5. Categories of nucleotide substitutions in the whole genome (annotated isolates)

 Only sites where two or more isolates have an SNV are considered

			1.pos	2.pos	3.pos	Tota	alNo	1.pos	2.pos	3.pos	Total	silent
								%	%	%	%	
Transitio	A-G	A→G	5/10	6/12	6/20	17/42	30/71	3.47%	4.17%	6.94%	14.58%	6/20
ns		G→A	4/14	6/9	3/6	13/29		4.86%	3.12%	2.08%	10.07%	3/6
	C-T	C→T	6/19	8/24	7/35	21/78	45/15	6.60%	8.33%	12.15%	27.08%	9/46
		Т→С	2/9	14/39	8/30	24/78	6	3.12%	13.54%	10.42%	27.08%	8/30
	Т	otal	17/52	34/84	24/91		75/227	18.06%	29.17%	31.60%	78.82%	26/102
Transvers	A-C	A→C	0	1 / 2	1 / 2	2/4	2/4	0	0.69%	0.69%	1.39%	1/2
ions		C→A	0	0	0	0		0	0	0	0	0
	A-T	A→T	3/6	0	0	3/6	7/14	2.08%	0	0	2.08%	0
		T→A	0	0	4/8	4/8		0	0	2.78%	2.78%	4/8
	G-C	G→C	0	0	0	0	0	0	0	0	0	0
		C→G	0	0	0	0		0	0	0	0	0
	G-T	G→T	2/4	0	1/2	3/6	7/43	1.39%	0	0.69%	2.08%	0
		T→G	3/14	1/23	0	4/37		4.86%	7.99%	0	12.85%	0
	Т	otal	8/24	2/25	6/12		16/61	8.33%	8.68%	4.17%	21.18%	5/10
Total			25/76	36/109	30/103		91/288	26.39%	37.85%	35.77%	100%	31/112

Table S6. Mutation analysis of S-protein.

Nonsynonumous mutation sites are in gray.

Relative nucleotide position	<u>8</u>	6	146	147	224	230	411	430	654	681	716	729	782	931	1026	1031	1058	1079	1098	11/0	1325	1437	1460	1502	1672	1683	1729 1788	1813	1819	1822	1954	1994	2003	2227	2244	2261	2301	2380	2578	2581	2680	2892	3002	3075	3321	3381	3395 3442	3487	3505	3546	3547	3623	3739
	t	С	c a	a	С	g	С	a	t	c (c c	t	С	g	a	a	c t	С	g	t	a	t	С	t	t c	c t	t	g	t	a	a t	g	c	a	a	c c	t t	С	g a	a a	a g	9 g	t	a	t		c	a	a	t (; t	C
AY394999 AY395000	g g	C C	c a c a	a a	C C	g g	C C	a a	t (с (с (с с с с	; t ; t	C C	g g	a a	a a	c t c t	c c	g g	t t	a a	t t	C C	t t	t c	c t	t	g g	t t	a a	a t a t	g g	C C	a a	a a	c c c c	c t	C C	g a g a	a a a a	a g a g) g) g	t t	a a	t t	t a t a	C C	a a	a a	t d t d	c t c t	t t	C C
AY395002 AY323977	g t	C C	ca ca	a	C C	g	C C	a a	t t		c c c c	t t	C C	g a	a a	a a	ct ct	C C	g	t t	a	t t	C C	t t	t c	c t	t	g	t t	a	a t a t	g	C C	a	a a		t t	C C	g a	a a	a g) g	t	a	t t	t a t a	C C	a a	a a	t o t o	c t	t t	C C
AY338175	t	C C	c a	a	C	g	C	a	t (t	c	g	a	a	c t	c	g	t	a	t	C	t t	t c	c t	t	g	t	a	a t	g	C C	a	a		2 t	C	g i	aa	a g	9 9 9 9 9 9	t	a	t t	t a	C C	a	a	t (; t	C
AY350750	t	c c	c a	a	c	g	C	a a	t		c c	, i ; t	c	g	a a	a a	c t	c	g	t	a	t	c	t	t c	c t	t	y g	t	a	a t	g	c	a	a		t t	C	g a	a a	a g	g g	t	a	t	t a	C	a	a a	t d		; t	C
AY357076 AY394998	t t	C C	ca ca	a a	с С	g g	c c	a a	t (с (с (с с с с	; t ; t	C C	g g	a a	a a	c t c t	c c	g g	t	a a	t t	c c	t t	t c	c t	t	g g	t t	a a	a t a t	g g	с С	a a	a a	c c c c	c t c t	C C	g a g a	a a a a	a g a g) g) g	t	a a	t t	t a t a	C C	a a	a a	t d t d	c c c c	; t ; t	C C
AY502923	t t	C C	ca ca	a	C	g	C	a a	t (t t	C	g	a a	a a	c t	c	g	t t	a	t t	C	t t	t c	t t	t t	g	t t	a	a t	g	C	a	a		t	C	g a	a a	a (g g	t t	a	t t	t a	C	a	a a	t (; t	C
AY502929	t	c C	c a	a	c	g	c	a	t (; t	C	g	a a	a a	c t	c	g	t	a	t	c	t	t c	ς t	t	g	t	a	a t	g	C	a	a		; t	C	g a	a a	a g) g	t	a	t	t a	C	a	a	t d		; t	C C
AY502932 AY463059	t t	C C	ca ca	a a	с С	g g	C C	a a	t (c c c c	с с с с	t t	C C	g g	a a	a a	c t c t	c c	g g	t	a a	t	C C	t t	t c	c t c g	t t	g a	t	a g	a t a t	g g	C C	a a	a a	c c c c	c t	C C	g a	a a a a	a g a g) g) g	t	a a	t t	t a t g	C C	a a	a a	t d t d	c c c c	; t ; t	C C
AY463060 NC 004718	t t	с с	ca ca	a a	C C	g	с с	a a	t (c d c d	c c c c	t t	с с	g a	a a	a a	ct ct	c c	g	t t	a	t	C C	t t	t o	c g	t t	a a	t t	g a	a t a t	g	C C	a a	a a	c (t t	C C	g a	a a	a g a g	g g g	t	a a	t t	t g t a	C C	a a	a a	t o t o	c c c c	t t	C C
AY394979	t ↓	C ↓	c a	a	C	g	C	a	t (; t	c	g	a	a (c t	C	g	C t	a	t	C	t t	t c	t t	t	g	t	a	a t	g	C	a	a		t	C	g a	a a	a g	9 9 9 9	t	a	t t	t a	C	a	a	a a	a c	; t	C
AY278741	t	ι C	c a	a	C	g	C	a a	t (c c	; t	C C	g g	a a	a a	c t	c c	g	t	a	t	C	t	t c	c t	t	g g	t	a	a t	g	C C	a	a		t t	C C	g a	a a	a g) y] g	t	a	ι t	c a	C C	a	a a	t d		; t	C C
AY297028 AY313906	t t	c c	ca ca	a a	с с	g g	c c	a a	t (с (с (с с с с	; t ; t	c c	g g	a a	a a	c t c t	t c	g g	t t	a a	t t	c c	t t	t c	c t	t	g g	t t	a a	a t a t	g g	C C	a a	a a	c c c c	c t c t	c c	g a	a a a a	a g a g	9 <u>9</u> 9 9	t	a g	t t	ta ta	C C	a a	a a	t d t d	c c c c	; t ; t	C C
AY394978	t +	C C	ca ca	a	C	g	c	a a	t t			t t	c	g	a	a (c t	c	g	t t	a	t t	C	t t	t o	t	t t	g	t t	a	a t	g	c	a	a (t	C	g a	a a	a () g	t t	a	t t	t a	C	a	g a	t o		; t	C
AY714217	t	c	c a	a	c	g	c	a	t (c (c c	; t	c	g	a	a (c t	c	g	t	a	t	c	t	t c	t t	t	g	t	a	g t	g	c	a	a		t	c	g a	a a	a g	9 9 9 9	t	a	t	t a	c	a	a	t (; t	c
AY278487 AY394983	t	с с	c c c a	a a	C C	a a	C C	a a	t (с (с (с с с с	; C	C C	a g	g g	a a	c t c t	c c	g g	t	a a	t	c c	t	t d	c t	t	g g	t	a a	a t a t	g g	C C	a a	a a		c t	C C	g a g a	a a a a	a g a g	g g g g	t	a a	t t	t a	C C	a a	a a	t d t d	с с с с	; t	C C
AY278489 AY390556	t t	c c	ca ca	a a	с с	a a	c c	a a	C (c t c t	t c t c	c c	c c	a a	g q	g (c t c t	c c	g	t t	a a	t t	c c	a t	t d	c t	t	g q	t t	a a	a t a t	g q	c c	a a	a (c c c c	; g ; q	t c	g a	a a	a (a (g g a g	c c	a a	t t	ta ta	c c	a q	a a	t d t d	c c c c	; t ; t	c c
AY394996	t +	C	c a	a	g	a	C	a	t (c t	t C	c C	C	a	g	g (c t	C	g	t	a	t	C	t +	t c	c t	t	g	t	a	a t	g	C	a	a		; g	C	g a	a a	a g	g g	C	a	t +	t a	C	a	a	t (; t	C
AY304486	t	c C	c a	a	у С	a	C	a a	t i	a t	t c	; C	a	g	g g	g (; c	a	t	a	a	g	t	t c	t t	t	g g	C	a	a c	g	t	g	a i	t c	, y ; g	C	g a	a ç	g g) g	c	a	t	t a	C	g	a a	t d		, t	C
AY304488 AY394985	t t	C C	ca ca	a a	C C	a a	C C	a a	t t	a t c c	t t c c	c c	a c	g g	g a	g a	c c c t	; c c	g g	t t	a a	a t	g c	t t	a d t d	c t	t	g g	c t	a a	a c a t	g g	t c	g a	a i a i	t d c d	; g ; g	C C	g a g a	a g a a	g t a g	g g g	c t	a a	t t	t a t a	C C	g g	a a	t d t d	c c c c	; t ; t	C C
AY394994 AY394986	t t	C C	ca ca	a	C C	a	C C	a a	t t		c c c c	C C	C C	g	a a	a a	ct	C C	g	t t	a	t t	C C	t t	t o	t t	t	g	t t	a	a t	g	C C	a	a a		; g	C C	g a	a a	a () g	t	a	t t	t a t a	C C	g a	a a	t o		t t	C t
AY394995	t	c	c a	a	C	a	C	a	t (c (c c	c c	C	g	a	a (c t	c	g	t	a	t	C	t	t c	t t	t	g	t	a	a t	g	C	a	a		; g	C	g a	a a	a g) g	t	a	t t	t a	C	g	a	t (; t	t
AY278488	t	с с	ta ca	a a	C C	a a	C C	a a	t (с (с (с с с с	c c	C C	g g	a a	a a	c t c t	c c	g g	t	a a	t	c c	t	t d	c t	t	g g	t	a a	a t a t	g g	C C	a a	a a		c g c t	C C	g a g a	a a a a	a g a g	g g g g	t	a a	t t	t a	C C	a a	a a	t d	с с с с	; t ; t	C C
AY278554 AY394989	t t	c c	ca ca	a a	с с	a a	c c	a a	t (с (с (c c c c	c c	c c	g q	a a	a a	c t c t	c c	g	t t	a a	t t	c c	t t	t d	c t	t	g q	t t	a a	a t a t	g q	c c	a a	a a	c c c c	t t	c c	g a	a a	a (a (g g a g	t	a a	t t	ta ta	c c	a a	a a	t d t d	c c c c	; t ; t	C C
AY394990	t +	C C	c a	a	С	a	С	a	t (c d		c c	С	g	a	a (c t	c	g	t +	a	t	С	t +	t o	t	t	g	t	a	a t	g	С	a	a		t	С	g a	a a	a ç	j g	t	a	t t	t a	C	a	a	t (; t	C
AY595412	t	c	c a	a	c	a	c	a a	t (; C	c	g	a a	a a	c t	c	g	t	a	t	c	t	t c	t	t	g	t	a	a t	g	c	a	a a		t	c	g a	a a	a ç	3 g	t	a	t	t a	c	a	a	t d		; t	C
AY278490 AY394992	t t	C C	ca ca	a a	C C	a a	C C	c a	t (с (с (с с с с	c c	C C	g g	a a	a a	c t c t	c c	g g	t	a a	t t	C C	t t	t d	c t	t	g g	t t	a a	a t a t	g g	C C	a a	a a	c c c c	c t	C C	c d g a	ca aa	a g a g	<u>)</u>] g	t	a a	t t	t a t a	c t	a a	a a	t d t d	c c c c	; t ; t	C C
AY508724 AY654624	t t	C C	ca ca	c	C C	g	C C	a a	t t		c c c c	c c	C C	g	a a	a a	ct	c c	g	t t	a	t t	C C	t t	t c	t t	t	g	t t	a	a t	g	C C	a	a a		t t	C C	g a	a a	a (g t	t	a	t a	t a t a	C C	a a	a a	t o		t t	C
AY394987	t	C	c a	a	C	g	C	a	t (C C	C	g	a	a (c t	c	g	t	a	t	C	t	t c	c t	t	g	t	a	a t	g	C	a	a		; t	C	g a	a a	a g	9 9 9 9	t	a	t t	t a	C	a	a	t d		t	C
AY291315	t	C C	c a	a	C	g g	C	a a	t (c c	c c	t	C C	g g	a a	a a	c t	c	g	t	a	t	c	t	t c	c t	t	g g	t	a	a t	g	C C	a	a		t t	C C	g a	a a	a g	g g	t	a	t	t a	t	a	a a	t d		; t	C
AY310120 AY461660	t t	C C	ca ca	a a	C C	g g	C C	a a	t (с (с (с с с с	; t ; t	c c	g g	a a	a a	c t c t	c c	g g	t t	a a	t t	c c	t t	t c	c t c t	t t	g g	t t	a a	a t a t	g	с с	a a	a a	c (c (c t c t	C C	g a g a	a a a a	a g a g	g g g g	t	a a	t t	t a t a	t t	a a	a a	t d t d	c c c c	; t ; t	C C
AY559081	t t	C C	ca ca	a	C	g	C C	a a	t t			; t	C	g	a a	a t	t t t t	c	g	t t	a	t t	C	t t	tt tt	t	t t	g	t t	a	a t	g	C	a	g (t t	C	g a	a a	a g	g g	t	a	t t	t a t a	C	a	a a	t (t t	C
AY559085	t	c	c a	a	C	g	C	a	t (c c	; t	c	g	a	a t	t t	c	g	t	a	t	C	t	t t	t	t	g	t	a	a t	g	C	a	g (5 t	C	g a	a a	a g) g	t	a	t	t a	C	a	a	t (; t	C
AY559086 AY559087	t	с с	c a c a	a a	C C	g g	с С	a a	t (с (с (с с с с	; t	C C	g g	a a	a a t	t t	c c	g g	t	a a	t	C C	t	t t	t	t	g g	t	a a	a t a t	g g	C C	a a	g g		c t	C C	g a g a	a a a a	a g a g) g	t	a a	t t	t a	C C	a a	a a	t d		; t ; t	C C
AY559093 AY559094	t t	C C	ca ca	a a	с с	g g	t c	a a	t (c d c d	c c c c	t t	C C	g g	a a	a i a i	t t t t	c c	g	t t	a a	t t	c c	t t	t t t t	t t	t	g g	t t	a a	a t a t	g	C C	a a	g (t t	C C	g a	a a	a g a g	g g g	t	a a	t t	<u>ta</u> ta	C C	a a	a a	t d t d	c c c c	; a ; t	C C
AY559095	t +	C	c a	а	С	g	С	a	t (c d	c c	t t	С	g	a	a i	t t	c	g	t +	a	t +	С	t +	t t	t	t	g	t +	а	a t	g	С	а	g		t	С	g a	a a	a g	j g	t	а	t +	t a	С	а	a	t (; t	С
AY559082	t	c C	c a	a	c	g	c	a a	t (, i ; t	c	g	a a	a a i	t t	c	g	t	a	t	c	t	t t	t	C	g g	t	a	a t	g	C	a	g (t	C	g a	a a	a ç	a a	t	a	t	t a	C	a	a a	t d		, t	C
AY559084 AY283796	t	C C	ca ca	a a	C C	g g	C C	a a	t (c c c c	с с с с	t t	C C	g g	a a	a i a i	t t c t	c c	g g	t	a a	t	C C	t t	t t t t	t t	c t	g g	t	a a	a t a t	g g	C C	a a	g a	c c c c	c t	C C	g a	a a a a	a g a g) g) g	t	a a	t t	t a t a	C C	a a	a a	t d t d	c c c c	; t ; t	C C
AY394850 AY485278	t t	с с	ca ca	a a	C C	g	с с	a a	t (c d c d	c c c c	t t	с с	g a	a a	a a	ct ct	c c	g	t t	a	t t	C C	t t	t o	c t	t	g a	t t	a a	a t a t	g	C C	a a	a a	c (t t	C C	g a	a a	a g a g	g g g	t	a a	t t	ta ta	C C	a a	a a	t o t o	c c c c	t t	C C
AY502925	t	C	c a	a	C	g	C	a	t (c c	c c	; t	C	g	a	a (c t	C	g	t	a	t	C	t	t c	c t	t	g	t	a	a t	g	C	a	a		; t	C	g á	a a	a g	9 9 9 9	t	a	t í	t a	C	a	a	t (; t	C
AY502928 AY502931	t	C C	c a	a	C	g	C	a a	t (c c	; t	C C	g g	a a	a a	c t	c c	g	t	a	t	C	t	t c	c t	t	g g	t	a	a t	g	C C	a	a		t t	C C	g a	a a	a g) y] g	t	a	t	t a	C C	a	a a	t d		; t	C C
AY502930 AY502927	t t	c c	ca ca	a a	с с	g g	c c	a a	t (с (с (с с с с	; t ; t	c c	g g	a a	a a	c t c t	c c	g g	t t	a a	t t	c c	t t	t c	c t	t	g g	t t	a a	a t a t	g g	c c	a a	a a	c c c c	c t c t	C C	g a	a a a a	a g a g	9 <u>9</u> 9 9	t	a a	t t	ta ta	C C	a a	a a	t d t d	c c c c	; t ; t	C C
AY502924	t t	C C	ca ca	a	C	g	c	a a	t t			t t	c	g	a	a (c t	c	g	t t	a	t t	C	t t	t o	t	t t	g	t t	a	a t	g	c	a	a (t	C	g a	a a	a g) g	t t	a	t t	t a	C	a	a a	t o		; t	C
AY362699	t	c	c a	a	c	g	c	a	t (c (c c	; t	c	g	a	a (c t	c	g	t	a	t	c	t	t c	t t	t	g	t	a	a t	g	c	a	a		t	c	g a	a a	a g	9 9 9 9	t	a	t	t a	c	a	a	t (; t	c
AY357075 AY348314	t	с с	ca ca	a a	C C	g g	C C	a a	t (с (с (с с с с	; t ; t	C C	g g	a a	a a	c t c t	c c	g g	t	a a	t	C C	t t	t d t d	c t c t	t	g g	t	a a	a t a t	g g	C C	a a	a a		c t c t	C C	g a g a	a a a a	a g a g	g g g g	t	a a	t t	ta ta	C C	a a	a a	t d t d	c c c c	; t ; t	C C
AY345986 AY338174	t t	c c	ca ca	a a	c c	g a	c c	a a	t (c d c d	c c c c	t t	c c	g a	a a	a a	c t c t	c c	g	t	a a	t t	c c	t t	t d	c t	t	g a	t t	a a	a t a t	g	c c	a a	a a	c c c c	c t c t	c c	g a	a a	a (a (g g a a	t	a a	t t	ta ta	c c	a a	a a	t d	c c c c	; t ; t	C C
AY321118 AY283797	t +	c	c a	a	С	g	С	a a	t (t t	С	g	a	a a	c t	C	g	t +	a	t t	С	t t	t c	t	t +	g	t t	a	a t	g	С	а	a		t	С	g a	a a	a ç	j g	t +	a	t t	t a	С	a	a a	t (; t	С
AY283795	t	c C	c a	a	C	g	C	a a	t		c c	, i ; t	C	g	a a	a a	c t	c	g	t	a	t	c	t	t c	t t	t	g g	t	a	a t	g	C	a	a a		t	C	g a	a a	a ç) g	t	a	t	t a	C	a	a a	t d		; t	C
AY283794 AY282752	t t	C C	ca ca	a a	C C	g g	C C	a a	t (с (с (с с с с	t t	C C	g g	a a	a a	c t c t	c c	g g	t t	a a	t t	C C	t t	t d	c t	t	g g	t t	a a	a t a t	g g	C C	a a	a a	c c c c	c t	C C	g a g a	a a a a	a g a g) g) g	t	a a	t t	t a t a	C C	a a	a a	t d t d	c c c c	; t ; t	C C
AY278491 AP006561	t t	C C	ca ca	a	C C	g	C C	a a	t (c c c c	t t	C C	g a	a a	a a	ct ct	c c	g	t t	a	t t	C C	t t	t c	c t	t	g	t t	a	a t a t	g	C C	a	a a		t t	C C	g a	a a	a g) g	t t	a	t t	t a t a	C C	a a	a a	t o t o		; t : t	C C
AP006559	t	C	c a	a	C	g	C	a	t (t	C	g	a	a (c t	C	g	t	a	t	C	t	t c	c t	t	g	t	a	a t	g	C	a	a		; t	C	g a	a a	a g	9 9 9 9	t	a	t 4	t a	C	a	a	t d		t	C
AP006557 AP006557	t	C C	c a	a	C	g	C	a a	t (c c	c c	; t	c	g g	a a	a a	c t	c c	g	t	a	t	C	t	t c	c t	t	g g	t	a	a t	g	C C	a	a	c c	t t	C C	g a	a a	a g) y] g	t	a	t	t a	C C	a	a a	t d		; t	C C
AY559092 AY559088	t t	C C	ca ca	a a	с с	g g	c c	a a	t (c d c d	c c c c	t t	c c	g g	a a	a a	ct ct	c c	g	t t	a a	t t	c c	t t	t d	c t	t	g g	t t	a a	a t a t	g g	C C	a a	a (c t c t	t	c c	g a	a a	a g a g	g g g g	t t	a a	t t	ta ta	c c	a a	a a	t d	c c c c	; t ; t	C C
AY283798	t	c t	c a	a ပုိပ	C	g n m	t C	a v	t (ນ ວ ຫ	c c	t t	C v m	g	a D	a D	c t ₊	C C	ل ب	t v	a	t v m	C	t	t c	t t	t on t	g , r	t v c	a D	a t	у С Г	D t a	a , D	a D	c t	t t		g a	a a	a g	j g	t t	a u m	t on	t a	t d	a D	a D	t (ນ ວ ຫ	t	
nucleotide change) C	† S	ĭ n 1 n 1			, ↑ 0	a 	t t	Č C	↑ C			, 1 0) T T	a a	† S	Ţ Ţ	Ĵ O			t t)	t→ê	t t→é	Ĵ.	<u>↑</u> <u>↑</u>		t 1 1 1 1 1 1 1 1 1 1 1 1 1) () () () () () () () () () (, Ω		↑ ↑ ວິ	n n n n) T T	↑ O		Ĵ Ĵ	d −	Ω Ω) D	↑ ກ	ົ ດີ) 1 1 1 1	t→ê	<u>⊥</u>		a↓) a	t →έ	↑ O		
transition(Is) / transversion(Tv	<u>v) Tv</u>	Γs	Is ne	יד או	v T ç	v Ts	5 Ts -	lv ne	IS	ys I A	Is ne	IS T	s T\ - ແ	/Ts 	I ÎS	IS ପ୍ର	ls e	IS IS	IS	IS T	s T	v Tv	V Tv	۲. ا	ا v ع	IS		s T:	s Ts			is T โอ		s Ts	I ÎS			v Ts		D D			et V	s Ts	ys I		is Ts ≥ ₽	Ts ⊇	ls ds	IV	Vs N	IS T	v Ts
	Ala	Tyr	r→L(Pro Cer	A ↓ A	A	Phe	it→Lo	Pro	n→L	r→L(Asp	רׂ ב	V→A	Arg	S→A	L ↓	e→S	Cys	L VS		n→L	L→S	e→T	le→	Ser	Sr→A	A A A	L L L	r→A		N U → S	L → A	L→A	Ala	a→<	Val	S → S	I → Le	r→A	۱۲→A	Ser	≥ 1 0	Lys Lys	n→L	Leu	D T L L L L L L L L L L L L L	s→G	A←n	Leu	n→L	а→ <	
a.a. changes		\square	Se		L L	E D	 	Me	_	As	Se	=		Ū		۲ ۲	Se	Ч		Ĥ		Asi	۲ ۲	РЬ	Ъ Т	-	Š	Asr	ε s	F	≝ :	Nel Nel	Se Se	S ⊨		T A		- L	<pre></pre>	Se	H H		1 Ar	0 m	7 As	2	2 GI	3 Ly:	9 Asi	N	3 GI	N N	2 C) 7 Let
a.a. position	27	30	49	64 61	75	27	137	144	218	227	236	240	261	311	342	344	353	360	366	39C 436	442	479	487	501	558	561	577	605	607	608	652	668	568 701	743	748	754	767	794	860	861	894	964	100	106	110	112	113	116.	116	118.	118	120	124
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number of SNVs	3	1	1	1	1	2 2	1 1		2	2	6	1 2	25	2 5	8	6	11	2	1	1	1	1 2	2 2	2 1	1	12	3	2	2 2	2 2		2	1	2 2	11	2	3 1	1 1		1	2	1	1	6 1	1	1	2 4	7		1	1	3	1 2