

Genetic evidence for an East Asian origin of domestic dogs

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SUPPLEMENTARY DATA

Materials and Methods

Samples. 526 dogs were sequenced in this study and 128 dogs were from previous studies (Tables S1 and S2) (2, 15, S1). The American continent was represented only by Arctic breeds, because the original Indian American dog populations were largely obliterated or mixed with European dogs in connection with the arrival of Europeans (S2). However, in a study of Xoloitzcuintli, a Mexican breed believed to have remained essentially isolated, the haplotypes found were all of Clades A, B and C (S3). The geographic origin of the 11 wolves sequenced in this study and the 27 wolves from previous studies (2, S1) is described in Fig. S2.

PCR and sequencing. DNA was extracted from blood and muscle using Proteinase K and organic solvents according to (S4) and from hairs according to (S5) or (S6). Part of the mtDNA control region was amplified in one fragment using primer pair (names denote position of primer 3'-end numbered according to the published dog mitochondrial genome (S7)) H15422: 5'-CTCTTGCTCCACCATCAGC-3' and L16106: 5'-AAACTATATGTCCTGAAACC-3' or in two overlapping fragments using primer pair H15422: 5'-CTCTTGCTCCACCATCAGC-3' and L15781: 5'-GTAAGAACCAGATGCCAGG-3' and primer pair H15765: 5'-CATACTAACGTGGGGGTTAC-3' and L16106: 5'-AAACTATATGTCCTGAAACC-3' or alternatively using primer pair H15360: 5'-ATTACCTTGGTCTTGTAACC-3' and L15784: 5'-CTGAAGTAAGAACCAGATGCC-3' and primer pair H15693: 5'-AATAAGGGCTTAATCACCATGC and L16102: 5'-AACTATATGTCCTGAAACCATTG-3'. Sequencing of PCR products was performed with the above primers using BigDye Terminator chemistry on ABI 377 and 3700 instruments (Applied Biosystems).

Phylogenetic analysis. The tree in figures 1 and S2 was calculated under a nucleotide substitution model (HKY+ Γ +I, with $\alpha=0.5960$ and $I=0.7367$) optimized for our data-set using a hierarchical maximum likelihood (ML) approach (21). A starting tree was calculated under the HKY+ Γ +I model using the neighbor joining method. This tree was further searched by 10^6 TBR iterations under the minimum evolution (ME) criteria without further improvement (22). In addition, several other tree building methods were used to confirm the classification of clades A-F. Maximum parsimony gave >10,000 trees after a heuristic search (TBR) of >40 million possible tree topologies. A strict consensus tree confirmed that clades B-F were robustly reconstructed. Similarly, a heuristic search (TBR) for the ME tree gave 4482 trees after >88 million possible trees also showing complete agreement in the classification of clades B-F. A tree searched by stepwise addition under the least squares optimality criteria (according to the Fitch-Margoliash method; S8), reconstructed all clades (A-F).

A ML ratio test showed that alternative rooting points were possible. Several reasonable rooting points along the center of the tree were tested, and none of these

possibilities was significantly better than the other. However, since we assume that a molecular clock is valid, the root giving the most homogeneous rate of evolution, as suggested by ingroup midpointing, was chosen as our best estimate. Because of extensive homoplasy in mainly clade A, the branching orders in the individual clades A-F were imploded. The alternative pathways are displayed in the minimum spanning networks in figure 2. The consistency index among all characters in the data for this final tree was $CI=0.54$ and the retention index was $RI=0.90$. The majority (49 out of 90 characters) of the informative sites had a $CI=1.0$ and 21 had $CI=0.5$ (S9). Note, however, that although these values are reasonably good for this data a tree without imploded nodes will give even higher CI because some shared ancestral substitutions on terminal taxa need only happen once.

The described homoplasy also affected our bootstrap values (clade A and B <50%, clade C = 87%, D = 65% and F = 95%) calculated from 500 bootstrap replicates. However, if the wolf population from which dog domestications occurred had little structure and many lineages were not domesticated then such wolf lineages would disturb the classification of dog lineages. Confirmatory to this assumption, excluding wolf sequences in our bootstrap analysis gave stronger support to the dog clades (B = 74%, C = 92%, D = 82% and F = 96%). In addition, by reducing the large data set in our study, thus reducing some homoplasy, better bootstrap values could be attained. Previously published data on smaller data-sets have given bootstrap values of >50% for clade A (2, 15).

Error estimation of genetic distances. The rate of nucleotide substitutions for our data set was calculated using the branch lengths of the phylogenetic tree (Fig. 1 and fig. S2). The branch lengths were calculated under the HKY+ Γ +I model with $\alpha=0.5960$ and $I=0.7367$. First, the sum of all branches from each OTU to the coyote outgroup was calculated, and second, the mean and standard deviation was obtained from these distances. Note, however, that the error estimate will not be accurate because each such distance is not an independent observation, and thus should be regarded as a rough estimate only. The time to the most recent common ancestor between dogs/wolfs and coyote was assumed to be 1 million years (17).

The error estimates of the mean pairwise distances between all individuals within each clade and subcluster, as well as the mean distance to each founder haplotype were calculated using a bootstrap resampling procedure. The standard deviation was calculated based on the number of substitutions from 1000 replicates with the same size as the original number of individuals for each clade and subcluster in the different geographic regions. Finally, the confidence intervals of the age of each different clade and subcluster were derived by combining the errors from the rate of substitution and the mean pairwise distances (clade A, assuming one founder) or the mean distance to each founder haplotype (clades B and C, and subclusters of clade A).

Supporting figures

Fig. S1. Alignment of dog and wolf sequences showing polymorphic positions only. Sequences are compared to haplotype A2 and differences from this sequence are shown. -, indel position; ?, unsequenced position.

	CA-TTAACTTCGGTACTTCFCGCCCTCC-CTAFTCCFTACATCCTAGTCAACGATTATAA-AATCGATAACCACTACTAACGTTGGGGTTACTACTCACTTCCTTTCGAACTTTAGCCTCA-CTCAAACT
A2	.....T.....
A1	.....C.....
A3	.....G.....
A4	.....T.....
A5	.....C.....
A6	.....T.....
A7	.....T.....
A8	.....T.....
A9	.....T.....
A10	.....T.....
A11	.....A.....
A12	.....T.....
A13	.....A.....
A14	.....C.....
A15	.....A.....
A16	.....C.....
A17	.....T.....
A18	.....A.....
A19	.....T.....
A20	.....A.....
A21	.....T.....
A22	.....C.....
A23	.....T.....
A24	.....G.....
A25	.....G.....
A26	.....G.....
A27	.....G.....
A28	.....A.....
A29	.....C.....
A30	.....T.....
A31	.....C.....
A32	.....G.....
A33	.....C.....
A34	.....G.....
A35	.....A.....
A36	.....G.....
A38	.....A.....
A39	.....C.....
A40	.....C.....
A41	.....A.....
A42	.....T.....
A43	.....A.....
A44	.....A.....
A45	.....A.....
A46	.....T.....
A47	.....T.....
A48	.....A.....
A49	.....A.....
A51	.....A.....
A52	.....C.....
A53	.....A.....
A54	.....T.....
A55	.....T.....
A56	.....A.....
A58	.....T.....
A59	.....A.....
A60	.....A.....
A61	.....T.....
A62	.....C.....
A63	.....C.....
A64	.....T.....
A65	.....T.....
A66	.....T.....
A67	.....C.....
A68	.....C.....
A69	.....T.....
A70	.....T.....
A71	.....C.....
A72	.....A.....
A73	.....A.....
A74	.....C.....
A75	.....G.....
B1	.....T.....
B2	.....T.....
B3	.....T.....
B4	.....T.....
B5	.....T.....
B6	.....T.....
B7	.....T.....
B8	.....T.....
B9	.....T.....
B10	.....T.....
B11	.....T.....
B12	.....T.....
B13	.....T.....
B14	.....T.....
B15	.....T.....
B16	.....T.....
B17	.....T.....
C1	.....T.....
C2	.....T.....
C3	.....T.....
C4	.....T.....
C5	.....T.....
C6	.....T.....
C7	.....T.....
D1	.....T.....
D2	.....T.....
D3	.....T.....
D4	.....T.....
D5	.....T.....
D6	.....T.....
E1	.....T.....
F1	.....T.....
F2	.....T.....
F3	.....T.....

Fig. S2. Phylogenetic tree of all sequences with wolf haplotypes indicated. The wolf haplotypes were sampled in the following geographic regions: W1, Mongolia; W2, Mongolia; W3, China; W4, Saudi Arabia; W5, Mongolia n=2; W6, Romania; W7, Afghanistan n=5; W8, Yugoslavia n=4; W9, China; W10, China; W11, Spain; W12, Saudi Arabia; W13, China; W14, China n=3; W15, China n=4; W16, China; W17, China and Mongolia; W18, China n=2; W19, Mongolia n=2; W20, Romania; W21, Italy; and W22, Yugoslavia n=3.

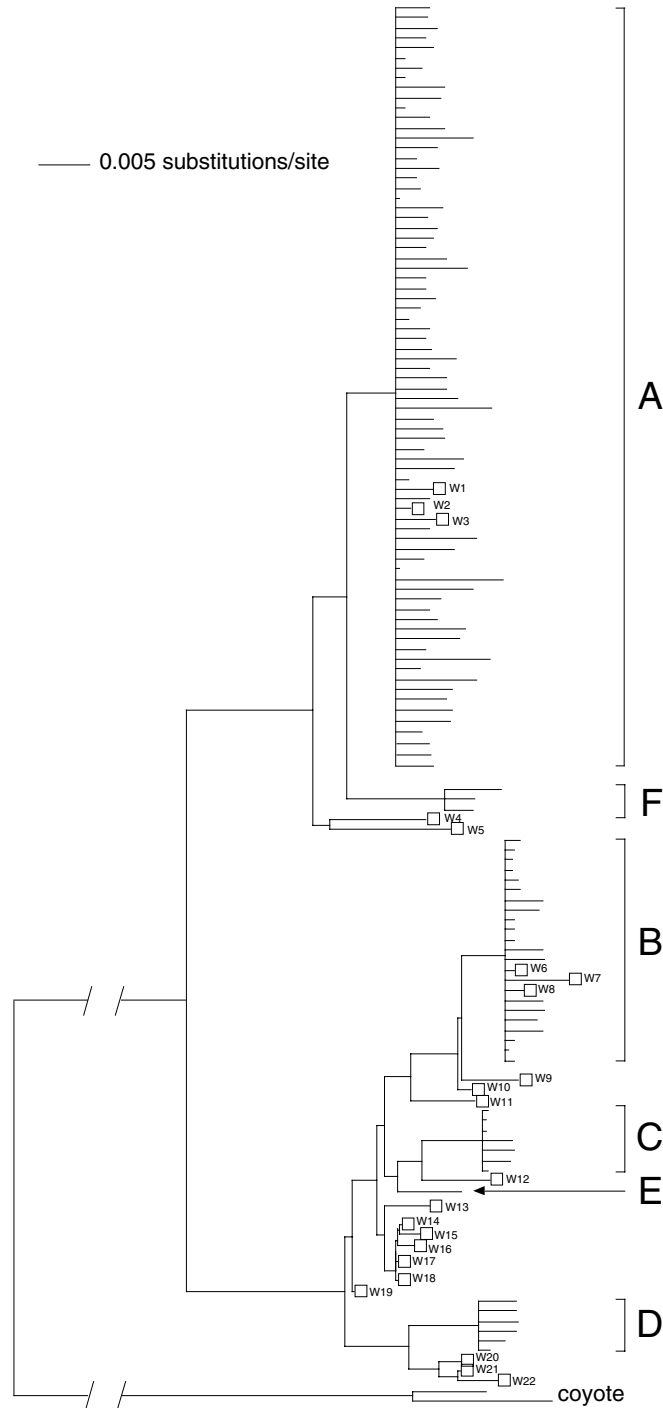
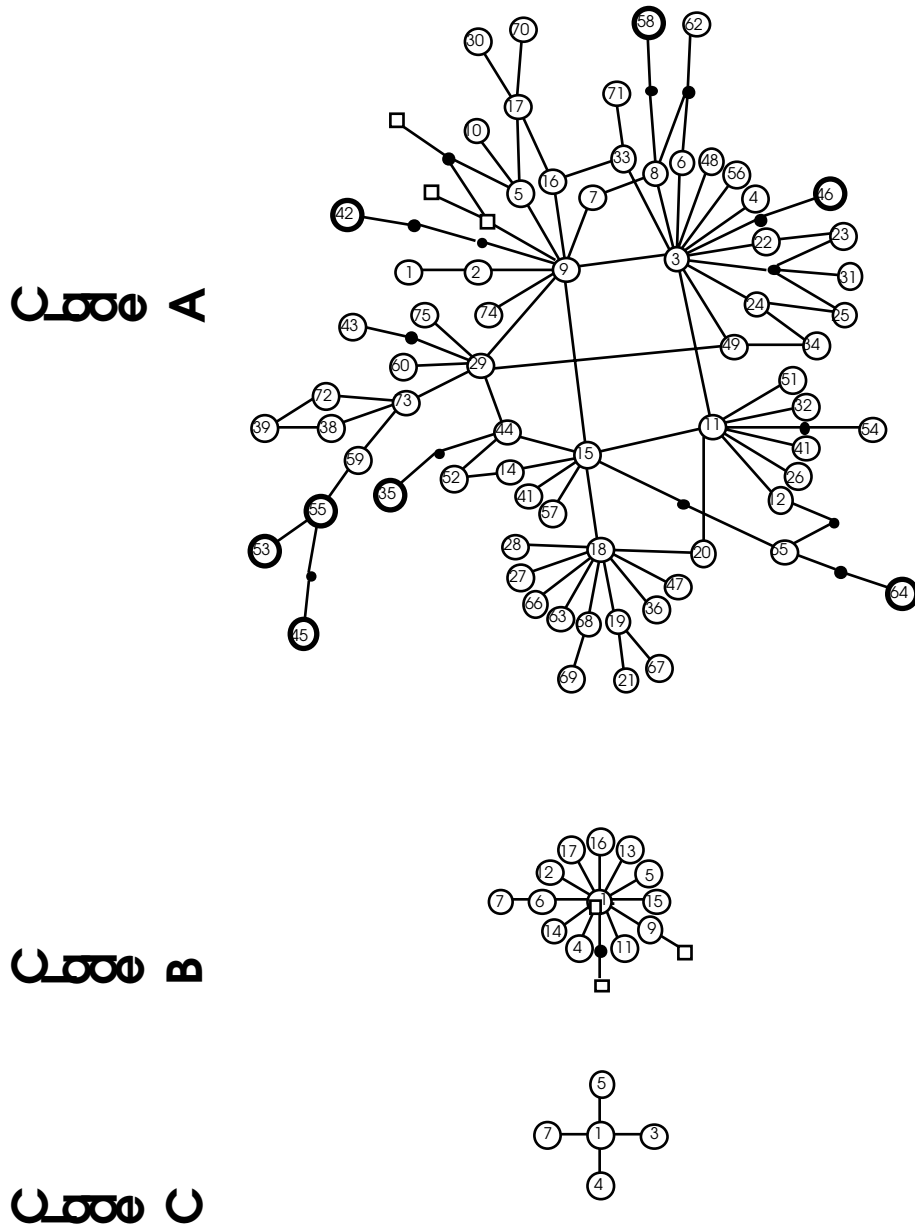


Fig. S3. Minimum-spanning networks of clades A, B and C with dog haplotypes indicated. Haplotypes (circles) are separated by one mutational step, ignoring indels. Black dots are hypothetical intermediates. Squares denote wolf haplotypes.



Supporting tables

Tables S1 and table S2 is available as an Excel file upon request from the authors.

Table S1. A list, sorted according to haplotype, of all analysed dogs giving haplotype, breed, and geographical origin. Columns give clade, haplotype, identical haplotype ignoring indels, individual, breed, different regional origins, and Genbank accession number for sequences obtained from the literature. E/W gives an origin from the eastern (E) or the western (W) parts of the world, defined here as the areas east and west of a line from the Himalayas to the Ural mountains.

Clade	Haplotype	Haplotype ignoring indels	Individual	Breed	Sub subregion	Subregion	Region	E/W	Genbank accession number
A	1		H52	Border collie		Britain	Europe	W	
A	1		H53	Border collie		Britain	Europe	W	
A	1		R105	Border collie		Britain	Europe	W	
A	1		R106	Border collie		Britain	Europe	W	
A	1		L26	Buhund		Scandinavia	Europe	W	
A	1		L62	Buhund		Scandinavia	Europe	W	
A	1		H1	Chow-chow		China	East Asia	E	
A	1		m12	Chow-chow		China	East Asia	E	
A	1		m15	Chow-chow		China	East Asia	E	
A	1		m9	Chow-chow		China	East Asia	E	
A	1		Ocol	Collie		Britain	Europe	W	D83603
A	1		NY45	Collie		Britain	Europe	W	
A	1		H92	Samoyed			Siberia	E	
A	1		m66	Samoyed			Siberia	E	
A	1		L16	Working kelpie		Britain	Europe	W	
A	2		R72	Anatholian shepherd		Turkey	Southwest Asia	W	
A	2		L28	Finnish spitz		Scandinavia	Europe	W	
A	2		L41	Icelandic sheepdog		Scandinavia	Europe	W	
A	2		R93	Icelandic sheepdog		Scandinavia	Europe	W	
A	2		Oiki6	Iki		Japan	East Asia	E	D83610
A	2		Oiki7	Iki		Japan	East Asia	E	D83610
A	2		Oiki8	Iki		Japan	East Asia	E	D83610
A	2		L31	Laika East Siberian			Siberia	E	
A	2		R5	Laika East Siberian			Siberia	E	
A	2		H67	Leonberger		Continent	Europe	W	
A	2		m130	Leonberger		Continent	Europe	W	
A	2		m131	Leonberger		Continent	Europe	W	
A	2		m132	Leonberger		Continent	Europe	W	
A	2		m133	Leonberger		Continent	Europe	W	
A	2		r19	Norrbottenspets		Scandinavia	Europe	W	
A	2		Tpoin	Pointer		Britain	Europe	W	AB007393
A	2		H13	setter Irish		Britain	Europe	W	
A	2		H56	setter Irish		Britain	Europe	W	
A	2		NY12	terrier West highland		Britain	Europe	W	
A	3		H2	Chow-chow		China	East Asia	E	
A	3		m11	Chow-chow		China	East Asia	E	
A	3		m14	Chow-chow		China	East Asia	E	
A	3		L29	Laika East Siberian			Siberia	E	
A	3		R9	Laika East Siberian			Siberia	E	
A	3		m21	Shar-pei	Tibet	China	East Asia	E	
A	3		5727sc		Sichuan	China	East Asia	E	
A	3		5733sc		Sichuan	China	East Asia	E	
A	4		P12	Sloughi		N. Africa	Africa	W	
A	4		P15	Sloughi		N. Africa	Africa	W	

A	5		L10	Basenji		S. Africa	Africa	W	
A	5		P27	Basenji		S. Africa	Africa	W	
A	5		P29	Basenji		S. Africa	Africa	W	
A	5		P43	Basenji		S. Africa	Africa	W	
A	5		P44	Basenji		S. Africa	Africa	W	
A	5		R22	Laika East Siberian			Siberia	E	
A	5		R23	Laika East Siberian			Siberia	E	
A	5		r27	Laika West Siberian			Siberia	E	
A	5		Oryu11	Ryukyu		Japan	East Asia	E	D83623
A	5		P14	Sloughi		N. Africa	Africa	W	
A	5		H76	Tibetan terrier	Tibet	China	East Asia	E	
A	5		m26	Tibetan terrier	Tibet	China	East Asia	E	
A	5		m28	Tibetan terrier	Tibet	China	East Asia	E	
A	5		m29	Tibetan terrier	Tibet	China	East Asia	E	
A	5		m31	Tibetan terrier	Tibet	China	East Asia	E	
A	6		P55	Santal hound			India	W	
A	6		P57	Santal hound			India	W	
A	6		R30	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	6		m58				India	W	
A	6		m59				India	W	
A	6		m61				India	W	
A	7		P67	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	8		P63	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	9		P28	Basenji		S. Africa	Africa	W	
A	9		Ny52	Saluki			Southwest Asia	W	
A	10		p13	Sloughi		N. Africa	Africa	W	
A	10		P16	Sloughi		N. Africa	Africa	W	
A	11		m102	Akbasch		Turkey	Southwest Asia	W	
A	11		m103	Akbasch		Turkey	Southwest Asia	W	
A	11		m104	Akbasch		Turkey	Southwest Asia	W	
A	11		m106	Akbasch		Turkey	Southwest Asia	W	
A	11		m107	Akbasch		Turkey	Southwest Asia	W	
A	11		m110	Akbasch		Turkey	Southwest Asia	W	
A	11		m111	Akbasch		Turkey	Southwest Asia	W	
A	11		Oaki1	Akita		Japan	East Asia	E	D83627
A	11		L8	Basset griffon		Continent	Europe	W	
A	11		NY53	Borzoi		Continent	Europe	W	
A	11		L27	Buhund		Scandinavia	Europe	W	
A	11		L61	Buhund		Scandinavia	Europe	W	
A	11		m76	Caanan dog		Israel	Southwest Asia	W	
A	11		m77	Caanan dog		Israel	Southwest Asia	W	
A	11		m78	Caanan dog		Israel	Southwest Asia	W	
A	11		m81	Caanan dog		Israel	Southwest Asia	W	
A	11		m82	Caanan dog		Israel	Southwest Asia	W	
A	11		m82	Caanan dog		Israel	Southwest Asia	W	
A	11		m10	Chow-chow		China	East Asia	E	
A	11		R41	Drever		Continent	Europe	W	
A	11		R42	Drever		Continent	Europe	W	
A	11		H85	Fox terrier		Britain	Europe	W	
A	11		R79	Gos d'atura Catalan		Continent	Europe	W	
A	11		TsibH	Husky Siberian			Siberia	E	AB007385
A	11		H73	Icelandic		Scandinavia	Europe	W	

A	11		5718sc		Sichuan	China	East Asia	E	
A	11		5725sc		Sichuan	China	East Asia	E	
A	11		5728sc		Sichuan	China	East Asia	E	
A	11		5729sc		Sichuan	China	East Asia	E	
A	11		5734sc		Sichuan	China	East Asia	E	
A	11		5740sc		Sichuan	China	East Asia	E	
A	11		5742sc		Sichuan	China	East Asia	E	
A	11		5745sc		Sichuan	China	East Asia	E	
A	11		5746sc		Sichuan	China	East Asia	E	
A	11		5754ti		Tibet	China	East Asia	E	
A	11		5755ti		Tibet	China	East Asia	E	
A	11		m54			Iran	Southwest Asia	W	
A	11		Indo2		Indonesia	Southeast Asia	East Asia	E	
A	11		m36		Thailand	Southeast Asia	East Asia	E	
A	11		m128				India		
A	12		Oafg	Afghan		Afghanistan	Southwest Asia	W	D83599
A	12		m122	Taigan			Southwest Asia	W	
A	12		R99	Taigan			Southwest Asia	W	
A	12		5808dl		Liaoning	China	East Asia	E	
A	13	12	R25	Laika West Siberian			Siberia	E	
A	14		P56	Santal hound			India	W	
A	14		m56				India	W	
A	14		m57				India	W	
A	14		m60				India	W	
A	15		m109	Akbasch		Turkey	Southwest Asia	W	
A	15		P84	Jindo		Korea	East Asia	E	
A	15		m116	Saluki		Saudi Arabia	Southwest Asia	W	
A	16		R70	Anatholian shepherd		Turkey	Southwest Asia	W	
A	16		H82	Greyhound			Southwest Asia	W	
A	16		H20	New Foundland		Britain	Europe	W	
A	16		P71	Nguni	South Africa	S. Africa	Africa	W	
A	16		H10	retriever Golden		Britain	Europe	W	
A	16		H64	retriever Golden		Britain	Europe	W	
A	16		R108	retriever Golden		Britain	Europe	W	
A	16		H5	retriever Labrador		Britain	Europe	W	
A	16		H54	retriever Labrador		Britain	Europe	W	
A	16		R44	retriever Labrador		Britain	Europe	W	
A	17		Oaki6	Akita		Japan	East Asia	E	D83609, D83617
A	17		p1	Anatholian pharia		Turkey	Southwest Asia	W	
A	17		NY18	Cav. K. Charles spaniel		Britain	Europe	W	
A	17		L2	Finnish lapphund		Scandinavia	Europe	W	
A	17		R2	Finnish lapphund		Scandinavia	Europe	W	
A	17		H99	German shepherd		Continent	Europe	W	
A	17		NY69	German shepherd		Continent	Europe	W	
A	17		R47	German shepherd		Continent	Europe	W	
A	17		NY58	Greyhound			Southwest Asia	W	
A	17		m74	Greenland dog			America	E	
A	17		Ohok2	Hokaido		Japan	East Asia	E	D83609, D83617

A	17		Ohok3	Hokaido		Japan	East Asia	E	D83609, D83617
A	17		Ohok4	Hokaido		Japan	East Asia	E	D83609, D83617
A	17		Thok.a	Hokkaido		Japan	East Asia	E	AB007382
A	17		H24	Huskey Alaskan			America	E	
A	17		L42	Icelandic sheepdog		Scandinavia	Europe	W	
A	17		Tkai.b	Kai		Japan	East Asia	E	AB007382
A	17		Okish1	Kishu		Japan	East Asia	E	D83609, D83617
A	17		H70	Leonberger		Continent	Europe	W	
A	17		m17	Mops		China	East Asia	E	
A	17		m19	Mops		China	East Asia	E	
A	17		H62	Norfolk terrier		Britain	Europe	W	
A	17		Opug1	Pug		Continent	Europe	W	D83609, D83617
A	17		Opug2	Pug		Continent	Europe	W	D83609, D83617
A	17		H49	retriever Chesapeake Bay		Britain	Europe	W	
A	17		H57	retriever Flatcoated		Britain	Europe	W	
A	17		H18	retriever Labrador		Britain	Europe	W	
A	17		H19	retriever Labrador		Britain	Europe	W	
A	17		H32	retriever Labrador		Britain	Europe	W	
A	17		R116	retriever Labrador		Britain	Europe	W	
A	17		R43	retriever Labrador		Britain	Europe	W	
A	17		R45	retriever Labrador		Britain	Europe	W	
A	17		Oshi28	Shiba		Japan	East Asia	E	D83609, D83617
A	17		Oshiko1	Shikoku		Japan	East Asia	E	D83609, D83617
A	17		5799sx		Shanxi	China	East Asia	E	
A	18		m112	Akbasch		Turkey	Southwest Asia	W	
A	18		Oaki2	Akita		Japan	East Asia	E	D83633
A	18		Obea	Beagle		Britain	Europe	W	D83633
A	18		L53	Beauceron		Continent	Europe	W	
A	18		H41	Border collie		Britain	Europe	W	
A	18		NY94	Bracco Italiano		Continent	Europe	W	
A	18		NY95	Bracco Italiano		Continent	Europe	W	
A	18		NY32	Chinese crested		China	East Asia	E	
A	18		R94	Chinese crested		China	East Asia	E	
A	18		R95	Chinese crested		China	East Asia	E	
A	18		Odal	Dalmatian		Continent	Europe	W	D83633
A	18		Oesk1	Eskimo dog			America	E	D83633
A	18		P19	Eskimo dog Canadian			America	E	
A	18		Ohok1	Hokkaido		Japan	East Asia	E	D83633
A	18		Oiki1	Iki		Japan	East Asia	E	D83633
A	18		Oiki2	Iki		Japan	East Asia	E	D83633
A	18		Okai1	Kai		Japan	East Asia	E	D83633
A	18		Tmal	Maltese		Continent	Europe	W	AB007392
A	18		R80	Maremmano Abruzzese		Continent	Europe	W	
A	18		p75	Nguni	South Africa	S. Africa	Africa	W	
A	18		Opoo	Poodle		Continent	Europe	W	D83633
A	18		R69	Pyreneisk vallhund		Continent	Europe	W	
A	18		H21	Samoyed			Siberia	E	
A	18		H15	setter English		Britain	Europe	W	
A	18		H16	setter English		Britain	Europe	W	
A	18		Oshi12	Shiba		Japan	East Asia	E	D83633
A	18		Oshi13	Shiba		Japan	East Asia	E	D83633
A	18		Oshi14	Shiba		Japan	East Asia	E	D83633

A	18		Oshi15	Shiba		Japan	East Asia	E	D83633
A	18		P65	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	18		5792sx		Shanxi	China	East Asia	E	
A	18		5757ti		Tibet	China	East Asia	E	
A	18		m49			Iran	Southwest Asia	W	
A	18		m3		Indonesia	Southeast Asia	East Asia	E	
A	19		m79	Caanan dog		Israel	Southwest Asia	W	
A	19		H9	German shepherd		Continent	Europe	W	
A	19		H96	German shepherd		Continent	Europe	W	
A	19		H97	German shepherd		Continent	Europe	W	
A	19		NY68	German shepherd		Continent	Europe	W	
A	19		NY71	German shepherd		Continent	Europe	W	
A	19		NY90	German shepherd		Continent	Europe	W	
A	19		R46	German shepherd		Continent	Europe	W	
A	19		R89	German shepherd		Continent	Europe	W	
A	19		Tger.a	German shepherd		Continent	Europe	W	AB007396
A	19		Tger.b	German shepherd		Continent	Europe	W	AB007396
A	19		H77	Keeshond		Continent	Europe	W	
A	19		L48	Keeshond		Continent	Europe	W	
A	19		P74	Nguni	South Africa	S. Africa	Africa	W	
A	19		Oryu1	Ryukyu		Japan	East Asia	E	D83618
A	19		Oryu2	Ryukyu		Japan	East Asia	E	D83618
A	19		Oryu3	Ryukyu		Japan	East Asia	E	D83618
A	19		Oryu4	Ryukyu		Japan	East Asia	E	D83618
A	19		5807dl		Liaoning	China	East Asia	E	
A	19		5801sx		Shanxi	China	East Asia	E	
A	19		5749sc		Sichuan	China	East Asia	E	
A	19		5804sc		Sichuan	China	East Asia	E	
A	19		5748sh		Sichuan	China	East Asia	E	
A	19		m47			Iran	Southwest Asia	W	
A	19		m51			Iran	Southwest Asia	W	
A	19		m52			Iran	Southwest Asia	W	
A	19		m55			Iran	Southwest Asia	W	
A	19		m39			tadzikistan	Southwest Asia	W	
A	20		L56	Maltesian pharaohound		Continent	Europe	W	
A	20		m108	Akbasch		Turkey	Southwest Asia	W	
A	20		m75	Caanan dog		Israel	Southwest Asia	W	
A	20		m80	Caanan dog		Israel	Southwest Asia	W	
A	20		H33	Dachshound Wirehaired		Continent	Europe	W	
A	20		H66	Dachshound Wirehaired		Continent	Europe	W	
A	20		NY87	Dachshund		Continent	Europe	W	
A	20		NY89	Dachshund		Continent	Europe	W	
A	20		R32	Podenko ibicenco		Continent	Europe	W	
A	20		Opoi	Pointer		Britain	Europe	W	D83616
A	20		L24	terrier Irish soft coated wheaten		Britain	Europe	W	

A	20		L21	Tervuerense		Continent	Europe	W	
A	21		m53			Iran	Southwest Asia	W	
A	22		H47	Boxer		Continent	Europe	W	
A	22		TengS	English setter		Britain	Europe	W	AB007394
A	22		R37	Irish wolfhound		Britain	Europe	W	
A	22		P69	Nguni	South Africa	S. Africa	Africa	W	
A	22		P72	Nguni	South Africa	S. Africa	Africa	W	
A	22		R36	Scottish deerhound		Britain	Europe	W	
A	22		P31	Sica	South Africa	S. Africa	Africa	W	
A	22		R31	Sloughi		N. Africa	Africa	W	
A	22		L57	St Bernhard		Continent	Europe	W	
A	22		L58	St Bernhard		Continent	Europe	W	
A	22		m30	Tibetan terrier	Tibet	China	East Asia	E	
A	23		L14	Borzoi		Continent	Europe	W	
A	24		Ogrpyr	Great Pyreneese		Continent	Europe	W	D83606
A	24		H100	Irish wolfhound		Britain	Europe	W	
A	24		H101	Irish wolfhound		Britain	Europe	W	
A	24		NY63	Irish wolfhound		Britain	Europe	W	
A	24		R48	Pyrene		Continent	Europe	W	
A	24		H74	Pyreneer		Continent	Europe	W	
A	25		m45			Iran	Southwest Asia	W	
A	25		m46			Iran	Southwest Asia	W	
A	26		P38	Saluki		Saudi Arabia	Southwest Asia	W	
A	26		P39	Saluki			Southwest Asia	W	
A	26		H61	Wirehaired foxterrier		Britain	Europe	W	
A	27		p33	Laika West Siberian			Siberia	E	
A	27		r26	Laika West Siberian			Siberia	E	
A	27		H68	Lundehund		Scandinavia	Europe	W	
A	27		L37	Lundehund		Scandinavia	Europe	W	
A	27		L19	Maremmano Abruzzese		Continent	Europe	W	
A	27		R76	Maremmano Abruzzese		Continent	Europe	W	
A	27		m84		Gambia	S. Africa	Africa	W	
A	27		m88		Gambia	S. Africa	Africa	W	
A	27		m50			Iran	Southwest Asia	W	
A	27		m42				India	W	
A	28		Tbea	Beagle		Britain	Europe	W	AB007390
A	28		H84	Cav. K. Charles spaniel		Britain	Europe	W	
A	29		Oaki4	Akita		Japan	East Asia	E	D83600
A	29		Oaki5	Akita		Japan	East Asia	E	D83600
A	29		Thok.b	Hokkaido		Japan	East Asia	E	AB007383
A	29		m63	Huskey Alaskan			America	E	
A	29		m64	Huskey Alaskan			America	E	
A	29		H90	Husky Siberian			Siberia	E	
A	29		L54	Husky Siberian			Siberia	E	
A	29		L50	Malamute Alaskan			America	E	
A	29		P10	Malamute Alaskan			America	E	
A	29		p5	Malamute Alaskan			America	E	
A	29		P6	Malamute Alaskan			America	E	
A	29		P7	Malamute Alaskan			America	E	
A	29		P9	Malamute Alaskan			America	E	
A	29		Tshi.a	Shikoku		Japan	East Asia	E	AB007383

A	29		P58	Singing dog	New Guinea	Southeast Asia	East Asia	E	
A	29		5812gx		Guangxi	China	East Asia	E	
A	29		5813gx		Guangxi	China	East Asia	E	
A	29		5709sc		Sichuan	China	East Asia	E	
A	29		5710sc		Sichuan	China	East Asia	E	
A	29		5726sc		Sichuan	China	East Asia	E	
A	29		Indo1		Indonesia	Southeast Asia	East Asia	E	
A	29		Tind.b		Indonesia	Southeast Asia	East Asia	E	AB007383
A	30		R51	Hamiltonstövare		Continent	Europe	W	
A	30		R6	Hamiltonstövare		Continent	Europe	W	
A	31		P18	Eskimo dog Canadian			America	E	
A	31		P20	Eskimo dog Canadian			America	E	
A	31		P21	Eskimo dog Canadian			America	E	
A	31		P22	Eskimo dog Canadian			America	E	
A	31		P23	Eskimo dog Canadian			America	E	
A	31		P24	Eskimo dog Canadian			America	E	
A	31		m71	Greenland dog			America	E	
A	31		m72	Greenland dog			America	E	
A	31		m73	Greenland dog			America	E	
A	31		L52	Greenland dog			America	E	
A	31		P3	Innu sled dog			America	E	
A	31		P4	Innu sled dog			America	E	
A	32		P26	Basenji		S. Africa	Africa	W	
A	32		P42	Basenji		S. Africa	Africa	W	
A	32		P59	Basenji		S. Africa	Africa	W	
A	32		P60	Basenji		S. Africa	Africa	W	
A	33		P11	Sloughi		N. Africa	Africa	W	
A	34		R34	Galgo Espanol		Continent	Europe	W	
A	35		R29	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	36		R74	Pyreneer		Continent	Europe	W	
A	38		m13	Chow-chow		China	East Asia	E	
A	38		P32	Sica	South Africa	S. Africa	Africa	W	
A	38		5817gx		Guangxi	China	East Asia	E	
A	39		L66	Shiba inu		Japan	East Asia	E	
A	39		L68	Shiba inu		Japan	East Asia	E	
A	40		R85	Puli		Continent	Europe	W	
A	41		P35	Laika West Siberian			Siberia	E	
A	42		Indo3		Cambodia	Southeast Asia	East Asia	E	
A	43		p36	Saluki		Saudi Arabia	Southwest Asia	W	
A	44		m22	Tibetan mastiff	Tibet	China	East Asia	E	
A	44		m25	Tibetan mastiff	Tibet	China	East Asia	E	
A	44		5815gx		Guangxi	China	East Asia	E	
A	44		5706sc		Sichuan	China	East Asia	E	
A	44		5721sc		Sichuan	China	East Asia	E	
A	44		5731sc		Sichuan	China	East Asia	E	
A	44		5741sc		Sichuan	China	East Asia	E	
A	44		m38		Thailand	Southeast Asia	East Asia	E	
A	45		m23	Tibetan mastiff	Tibet	China	East Asia	E	
A	45		m24	Tibetan mastiff	Tibet	China	East Asia	E	
A	46		m37		Thailand	Southeast Asia	East Asia	E	
A	47		m124		Filipines	Southeast Asia	East Asia	E	
A	48		m85		Gambia	S. Africa	Africa	W	
A	49		m99	Kangal		Turkey	Southwest Asia	W	
A	50	17	m20	Mops		China	East Asia	E	

A	51		5707sc		Sichuan	China	East Asia	E	
A	51		5716sc		Sichuan	China	East Asia	E	
A	51		5717sc		Sichuan	China	East Asia	E	
A	51		5722sc		Sichuan	China	East Asia	E	
A	51		5723sc		Sichuan	China	East Asia	E	
A	51		5730sc		Sichuan	China	East Asia	E	
A	51		5732sc		Sichuan	China	East Asia	E	
A	51		5735sc		Sichuan	China	East Asia	E	
A	51		5736sc		Sichuan	China	East Asia	E	
A	51		5737sc		Sichuan	China	East Asia	E	
A	51		5738sc		Sichuan	China	East Asia	E	
A	51		5739sc		Sichuan	China	East Asia	E	
A	51		5743sc		Sichuan	China	East Asia	E	
A	51		5744sc		Sichuan	China	East Asia	E	
A	51		5747sc		Sichuan	China	East Asia	E	
A	52		5823ti		Tibet	China	East Asia	E	
A	53		5827ti		Tibet	China	East Asia	E	
A	53		5828ti		Tibet	China	East Asia	E	
A	54		5756ti		Tibet	China	East Asia	E	
A	55		5848sx		Shanxi	China	East Asia	E	
A	56		5852sx		Shanxi	China	East Asia	E	
A	57		5719sc		Sichuan	China	East Asia	E	
A	58		5720sc		Sichuan	China	East Asia	E	
A	59		5703sc		Sichuan	China	East Asia	E	
A	59		5705sc		Sichuan	China	East Asia	E	
A	59		5711sc		Sichuan	China	East Asia	E	
A	59		5712sc		Sichuan	China	East Asia	E	
A	59		5724sc		Sichuan	China	East Asia	E	
A	60		5704sc		Sichuan	China	East Asia	E	
A	61	17	5785ah		Anhui	China	East Asia	E	
A	61	17	5786ah		Anhui	China	East Asia	E	
A	62		5818gx		Guangxi	China	East Asia	E	
A	63		Oesk2	Eskimo dog			America	E	D83605
A	64		Oshi27	Shiba		Japan	East Asia	E	D83629
A	64		Tkor.a			Korea	East Asia	E	AB007400, D83629
A	65		Oshitz1	Shi tzu	Tibet	China	East Asia	E	D83635
A	66		Ocav	Cav. K. Charles spaniel		Britain	Europe	W	D83602
A	67		Ohok8	Hokkaido		Japan	East Asia	E	D83608
A	68		Oiki3	Iki		Japan	East Asia	E	D83628
A	68		Oshi16	Shiba		Japan	East Asia	E	D83628
A	68		Oshi17	Shiba		Japan	East Asia	E	D83628
A	68		Oshi18	Shiba		Japan	East Asia	E	D83628
A	68		Oshi19	Shiba		Japan	East Asia	E	D83628
A	68		Oshi20	Shiba		Japan	East Asia	E	D83628
A	68		Oshi21	Shiba		Japan	East Asia	E	D83628
A	68		Oshi22	Shiba		Japan	East Asia	E	D83628
A	68		Oshi23	Shiba		Japan	East Asia	E	D83628
A	68		Oshi24	Shiba		Japan	East Asia	E	D83628
A	68		TshiS.a	Shiba,Shinsu		Japan	East Asia	E	AB007389, D83628
A	68		TshiS.b	Shiba,Shinsu		Japan	East Asia	E	AB007389, D83628
A	69		Oshi25	Shiba		Japan	East Asia	E	D83631
A	70		Tshet	Shetland sheepdog		Britain	Europe	W	AB007395, D83626
A	70		Oshel1	Shetland sheepdog		Britain	Europe	W	D83626
A	70		Oshel2	Shetland sheepdog		Britain	Europe	W	D83626
A	71		Okish5	Kishu		Japan	East Asia	E	D83612
A	72		Oryu7	Ryukyu		Japan	East Asia	E	D83621
A	72		Oryu8	Ryukyu		Japan	East Asia	E	D83621
A	73		Tkis.a	Kishu		Japan	East Asia	E	AB007384, D83613
A	73		Tkis.b	Kishu		Japan	East Asia	E	AB007384, D83613
A	73		Okish3	Kishu		Japan	East Asia	E	D83613
A	73		5819gx		Guangxi	China	East Asia	E	
A	73		5803sx		Shanxi	China	East Asia	E	
A	74		TShiM.a	Shiba,Mino		Japan	East Asia	E	AB007386

A	75		m2		Indonesia	Southeast Asia	East Asia	E	
A	75		Tind.a		Indonesia	Southeast Asia	East Asia	E	AB007398
B	1		NY40	Buhund		Scandinavia	Europe	W	
B	1		Tdach	Dachshund		Continent	Europe	W	AB007387, AB007391
B	1		NY88	Dachshund		Continent	Europe	W	
B	1		Tdob	Dobberman pinscher		Continent	Europe	W	AB007387, AB007391
B	1		Odob	Dobberman pinscher		Continent	Europe	W	D83604,D83622
B	1		NY82	Dobberman pinscher		Continent	Europe	W	
B	1		L39	Finnish spitz		Scandinavia	Europe	W	
B	1		L60	Finnish spitz		Scandinavia	Europe	W	
B	1		R12	Finnish spitz		Scandinavia	Europe	W	
B	1		R14	Finnish spitz		Scandinavia	Europe	W	
B	1		R16	Finnish spitz		Scandinavia	Europe	W	
B	1		R17	Finnish spitz		Scandinavia	Europe	W	
B	1		R59	Finsk stövare		Continent	Europe	W	
B	1		H6	Groenedael		Continent	Europe	W	
B	1		Tkai.a	Kai		Japan	East Asia	E	AB007387, AB007391
B	1		m94	Kangal		Turkey	Southwest Asia	W	
B	1		R8	Kooikerhondje		Continent	Europe	W	
B	1		P73	Nguni	South Africa	S. Africa	Africa	W	
B	1		L38	Norrbottenspets		Scandinavia	Europe	W	
B	1		L4	Norrbottenspets		Scandinavia	Europe	W	
B	1		r20	Norrbottenspets		Scandinavia	Europe	W	
B	1		H11	Otterhound		Britain	Europe	W	
B	1		m5	Pekingese		China	East Asia	E	
B	1		H38	retriever Golden		Britain	Europe	W	
B	1		H45	retriever Golden		Britain	Europe	W	
B	1		R102	retriever Golden		Britain	Europe	W	
B	1		R103	retriever Golden		Britain	Europe	W	
B	1		NO1	retriever Labrador		Britain	Europe	W	
B	1		Oryu10	Ryukyu		Japan	East Asia	E	D83604, D83622
B	1		Oryu9	Ryukyu		Japan	East Asia	E	D83604, D83622
B	1		m119	Saluki		Saudi Arabia	Southwest Asia	W	
B	1		R57	Saluki			Southwest Asia	W	
B	1		m65	Samoyed			Siberia	E	
B	1		m67	Samoyed			Siberia	E	
B	1		Tsh.b	Shiba,Mino		Japan	East Asia	E	AB007387, AB007391
B	1		P30	Sica	South Africa	S. Africa	Africa	W	
B	1		m33	Sloughi	algeria	N. Africa	Africa	W	
B	1		NY16	terrier Yorkshire		Britain	Europe	W	
B	1		H135	Tibetan spaniel	Tibet	China	East Asia	E	
B	1		H69	Tibetan spaniel	Tibet	China	East Asia	E	
B	1		m32	Tibetan spaniel	Tibet	China	East Asia	E	
B	1		L23	Weimaraner		Continent	Europe	W	
B	1		L15	Working kelpie		Britain	Europe	W	
B	1		5814gx		Guangxi	China	East Asia	E	
B	1		5816gx		Guangxi	China	East Asia	E	
B	1		5810dl		Liaoning	China	East Asia	E	
B	1		5793sx		Shanxi	China	East Asia	E	
B	1		5795sx		Shanxi	China	East Asia	E	
B	1		5851sx		Shanxi	China	East Asia	E	
B	1		5802sx		Shanxi	China	East Asia	E	
B	1		m86		Gambia	S. Africa	Africa	W	
B	1		m48			Iran	Southwest Asia	W	
B	1		m1		Indonesia	Southeast	East Asia	E	

B	1		m129		Cambodia	Asia Southeast Asia	East Asia	E	
B	1		m43				India	W	
B	1		5797sx		Shanxi	China	East Asia	E	
B	2	1	H102	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	H29	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	L13	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	NY57	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	m105	Akbasch		Turkey	Southwest Asia	W	
B	2	1	P49	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P50	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P51	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P53	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P54	Canaan dog		Israel	Southwest Asia	W	
B	2	1	L11	Saluki			Southwest Asia	W	
B	2	1	m115	Saluki			Southwest Asia	W	
B	2	1	m34	Saluki		Syria	Southwest Asia	W	
B	2	1	m35	Saluki		Dubai	Southwest Asia	W	
B	2	1	NY50	Saluki			Southwest Asia	W	
B	2	1	R56	Saluki			Southwest Asia	W	
B	2	1	r58	Saluki			Southwest Asia	W	
B	2	1	m121	Taigan			Southwest Asia	W	
B	2	1	R101	Taigan			Southwest Asia	W	
B	2	1	m113	Tazi		kazakstan	Southwest Asia	W	
B	2	1	5809dl		Liaoning	China	East Asia	E	
B	2	1	m125			Iran	Southwest Asia	W	
B	2	1	m127			Iran	Southwest Asia	W	
B	3	1	R13	Finnish spitz		Scandinavia	Europe	W	
B	3	1	R78	Kuvasz		Continent	Europe	W	
B	4		P17	Pariah dog	Thailand	Southeast Asia	East Asia	E	
B	5		Taki.a	Akita		Japan	East Asia	E	AB007380
B	5		L45	Akita inu		Japan	East Asia	E	
B	5		P86	Pungsan		Korea	East Asia	E	
B	5		Oryu5	Ryukyu		Japan	East Asia	E	D83619
B	6		Oaki3	Akita		Japan	East Asia	E	D83601
B	6		P61	Canaan dog		Israel	Southwest Asia	W	
B	6		P62	Canaan dog		Israel	Southwest Asia	W	
B	6		NY10	Dachshound		Continent	Europe	W	
B	6		H81	dachshound Wirehaired		Continent	Europe	W	
B	6		L20	Dutch shepherd		Continent	Europe	W	
B	6		R84	Dutch shepherd		Continent	Europe	W	
B	7		NY83	D/S gardshund		Continent	Europe	W	
B	8	7	H30	retriever Flatcoated		Britain	Europe	W	
B	9		P40	Canaan dog		Israel	Southwest Asia	W	

B	9		P41	Canaan dog		Israel	Southwest Asia	W	
B	10	6	R81	Kaukazkaia Outjarka			Southwest Asia	W	
B	11		R96	Chinese crested		China	East Asia	E	
B	12		R40	Affenpinscher		Continent	Europe	W	
B	12		Okish2	Kishu		Japan	East Asia	E	D83620
B	12		Oryu6	Ryukyu		Japan	East Asia	E	D83620
B	13		5805dl		Liaoning	China	East Asia	E	
B	14		Oaki7	Akita		Japan	East Asia	E	D83607
B	14		Oaki8	Akita		Japan	East Asia	E	D83607
B	14		Oaki9	Akita		Japan	East Asia	E	D83607
B	14		Ohok5	Hokkaido		Japan	East Asia	E	D83607
B	14		Ohok6	Hokkaido		Japan	East Asia	E	D83607
B	14		Ohok7	Hokkaido		Japan	East Asia	E	D83607
B	14		Oiki4	Iki		Japan	East Asia	E	D83607
B	14		Oiki5	Iki		Japan	East Asia	E	D83607
B	15		Osai	Saluki			Southwest Asia	W	D83625
B	16		Oshitz2	Shi tzu	Tibet	China	East Asia	E	D83634
B	17		Tmon.a			Mongolia	East Asia	E	AB007402
C	1		H95	German shepherd		Continent	Europe	W	
C	1		H98	German shepherd		Continent	Europe	W	
C	1		NY11	German shepherd		Continent	Europe	W	
C	1		Osibh1	Husky Siberian			Siberia	E	D83624,D83638
C	1		m40	Husky Siberian			Siberia	E	
C	1		L44	Pittbull		Britain	Europe	W	
C	1		Tryu.a	Ryukyu		Japan	East Asia	E	AB007388
C	1		Tryu.b	Ryukyu		Japan	East Asia	E	AB007388
C	1		Oryu12	Ryukyu		Japan	East Asia	E	D83624, D83638
C	1		m68	Samoyed			Siberia	E	
C	1		5800sx		Shanxi	China	East Asia	E	
C	2	1	Oshiko2	Shikoku		Japan	East Asia	E	D83636
C	2	1	H48	terrier West highland		Britain	Europe	W	
C	2	1	5794sx		Shanxi	China	East Asia	E	
C	2	1	5714sc		Sichuan	China	East Asia	E	
C	2	1	m126			Iran	Southwest Asia	W	
C	3		H91	Jämthund		Scandinavia	Europe	W	
C	3		R92	Jämthund		Scandinavia	Europe	W	
C	3		P76	Nguni	South Africa	S. Africa	Africa	W	
C	3		Opek	Pekingese		China	East Asia	E	D83630
C	3		m8	Pekingese		China	East Asia	E	
C	3		H28	Riesenschnauzer		Continent	Europe	W	
C	3		H35	Riesenschnauzer		Continent	Europe	W	
C	3		Oshi10	Shiba		Japan	East Asia	E	D83630
C	3		Oshi11	Shiba		Japan	East Asia	E	D83630
C	3		Oshi3	Shiba		Japan	East Asia	E	D83630
C	3		Oshi4	Shiba		Japan	East Asia	E	D83630
C	3		Oshi5	Shiba		Japan	East Asia	E	D83630
C	3		Oshi6	Shiba		Japan	East Asia	E	D83630
C	3		Oshi7	Shiba		Japan	East Asia	E	D83630
C	3		Oshi8	Shiba		Japan	East Asia	E	D83630
C	3		Oshi9	Shiba		Japan	East Asia	E	D83630
C	3		L63	Shiba inu		Japan	East Asia	E	
C	3		L67	Shiba inu		Japan	East Asia	E	
C	3		L32	stövare Finsk		Scandinavia	Europe	W	
C	3		H60	terrier Airedale		Britain	Europe	W	
C	3		P66		Vietnam	Southeast Asia	East Asia	E	
C	3		m62				India	W	
C	4		p34	Laika West Siberian			Siberia	E	
C	5		L18	Sarplaninac		Continent	Europe	W	
C	5		Tmon.b			Mongolia	East Asia	E	AB007403

C	5		5787sx		Shanxi	China	East Asia	E	
C	6	5	m101	Kangal		Turkey	Southwest Asia	W	
C	6	5	m92	kangal		Turkey	Southwest Asia	W	
C	6	5	m96	Kangal		Turkey	Southwest Asia	W	
C	6	5	m97	Kangal		Turkey	Southwest Asia	W	
C	7		5796sx		Shanxi	China	East Asia	E	
D	1		R52	Finnish lapphund		Scandinavia	Europe	W	
D	1		R53	Finnish lapphund		Scandinavia	Europe	W	
D	1		R90	Finnish lapphund		Scandinavia	Europe	W	
D	1		R91	Finnish lapphund		Scandinavia	Europe	W	
D	1		H37	Jämthund		Scandinavia	Europe	W	
D	1		H65	Jämthund		Scandinavia	Europe	W	
D	1		R1	Lappsck vallhund		Scandinavia	Europe	W	
D	1		H25	Norwegian elkhound		Scandinavia	Europe	W	
D	1		H93	Norwegian elkhound		Scandinavia	Europe	W	
D	1		R4	Norwegian elkhound		Scandinavia	Europe	W	
D	1		L3	Swedish lapphund		Scandinavia	Europe	W	
D	1		L33	Swedish lapphund		Scandinavia	Europe	W	
D	1		L34	Swedish lapphund		Scandinavia	Europe	W	
D	1		NY93	Swedish lapphund		Scandinavia	Europe	W	
D	2	1	R10	Finnish spitz		Scandinavia	Europe	W	
D	3	1	R50	Jämthund		Scandinavia	Europe	W	
D	3	1	L35	Lappsck vallhund		Scandinavia	Europe	W	
D	4		L1	Lappsck vallhund		Scandinavia	Europe	W	
D	5		m100	Kangal		Turkey	Southwest Asia	W	
D	5		m98	Kangal		Turkey	Southwest Asia	W	
D	6		R33	Galgo Espanol		Continent	Europe	W	
E	1		P77	Pungsan		Korea	East Asia	E	
E	1		Oshi26	Shiba		Japan	East Asia	E	D83632
E	1		Tkor.b			Korea	East Asia	E	AB007401
F	1		Okish4	Kishu		Japan	East Asia	E	D83611
F	2		Osibh2	Husky Siberian			Siberia	E	D83637
F	3		Tak.b	Akita		Japan	East Asia	E	AB007381

Table S2. A list, sorted according to geographic origin, of all analysed dogs giving haplotype, breed, and geographical origin. Columns give clade, haplotype, identical haplotype ignoring indels, individual, breed, different regional origins, and Genbank accession number for sequences obtained from the literature. E/W gives an origin from the eastern (E) or the western (W) parts of the world, defined here as the areas east and west of a line from the Himalayas to the Ural mountains.

Clade	Haplotype	Haplotype ignoring indels	Individual	Breed	Sub subregion	Subregion	Region	E/W	Genbank accession number
A	4		P12	Sloughi		N. Africa	Africa	W	
A	4		P15	Sloughi		N. Africa	Africa	W	
A	5		P14	Sloughi		N. Africa	Africa	W	
A	5		L10	Basenji		S. Africa	Africa	W	
A	5		P27	Basenji		S. Africa	Africa	W	
A	5		P29	Basenji		S. Africa	Africa	W	
A	5		P43	Basenji		S. Africa	Africa	W	
A	5		P44	Basenji		S. Africa	Africa	W	
A	9		P28	Basenji		S. Africa	Africa	W	
A	10		p13	Sloughi		N. Africa	Africa	W	
A	10		P16	Sloughi		N. Africa	Africa	W	
A	11		P68	Nguni	South Africa	S. Africa	Africa	W	
A	11		p70	Nguni	South Africa	S. Africa	Africa	W	
A	11		L43	Rhodesian ridgeback		S. Africa	Africa	W	
A	16		P71	Nguni	South Africa	S. Africa	Africa	W	
A	18		p75	Nguni	South Africa	S. Africa	Africa	W	
A	19		P74	Nguni	South Africa	S. Africa	Africa	W	
A	22		R31	Sloughi		N. Africa	Africa	W	
A	22		P69	Nguni	South Africa	S. Africa	Africa	W	
A	22		P72	Nguni	South Africa	S. Africa	Africa	W	
A	22		P31	Sica	South Africa	S. Africa	Africa	W	
A	27		m84		Gambia	S. Africa	Africa	W	
A	27		m88		Gambia	S. Africa	Africa	W	
A	32		P26	Basenji		S. Africa	Africa	W	
A	32		P42	Basenji		S. Africa	Africa	W	
A	32		P59	Basenji		S. Africa	Africa	W	
A	32		P60	Basenji		S. Africa	Africa	W	
A	33		P11	Sloughi		N. Africa	Africa	W	
A	38		P32	Sica	South Africa	S. Africa	Africa	W	
A	48		m85		Gambia	S. Africa	Africa	W	
B	1		m33	Sloughi	algeria	N. Africa	Africa	W	
B	1		P73	Nguni	South Africa	S. Africa	Africa	W	
B	1		P30	Sica	South Africa	S. Africa	Africa	W	
B	1		m86		Gambia	S. Africa	Africa	W	
C	3		P76	Nguni	South Africa	S. Africa	Africa	W	
A	17		m74	Greenland dog			America	E	
A	17		H24	Huskey Alaskan			America	E	
A	18		Oesk1	Eskimo dog			America	E	D83633
A	18		P19	Eskimo dog Canadian			America	E	
A	29		m63	Huskey Alaskan			America	E	
A	29		m64	Huskey Alaskan			America	E	
A	29		L50	Malamute Alaskan			America	E	
A	29		P10	Malamute			America	E	

				Alaskan						
A	29		p5	Malamute Alaskan			America	E		
A	29		P6	Malamute Alaskan			America	E		
A	29		P7	Malamute Alaskan			America	E		
A	29		P9	Malamute Alaskan			America	E		
A	31		P18	Eskimo dog Canadian			America	E		
A	31		P20	Eskimo dog Canadian			America	E		
A	31		P21	Eskimo dog Canadian			America	E		
A	31		P22	Eskimo dog Canadian			America	E		
A	31		P23	Eskimo dog Canadian			America	E		
A	31		P24	Eskimo dog Canadian			America	E		
A	31		L52	Greenland dog			America	E		
A	31		m71	Greenland dog			America	E		
A	31		m72	Greenland dog			America	E		
A	31		m73	Greenland dog			America	E		
A	31		P3	Innu sled dog			America	E		
A	31		P4	Innu sled dog			America	E		
A	63		Oesk2	Eskimo dog			America	E	D83605	
A	1		H1	Chow-chow		China	East Asia	E		
A	1		m12	Chow-chow		China	East Asia	E		
A	1		m15	Chow-chow		China	East Asia	E		
A	1		m9	Chow-chow		China	East Asia	E		
A	2		Oiki6	Iki		Japan	East Asia	E	D83610	
A	2		Oiki7	Iki		Japan	East Asia	E	D83610	
A	2		Oiki8	Iki		Japan	East Asia	E	D83610	
A	3		H2	Chow-chow		China	East Asia	E		
A	3		m11	Chow-chow		China	East Asia	E		
A	3		m14	Chow-chow		China	East Asia	E		
A	3		m21	Shar-pei	Tibet	China	East Asia	E		
A	3		5727sc		Sichuan	China	East Asia	E		
A	3		5733sc		Sichuan	China	East Asia	E		
A	5		H76	Tibetan terrier	Tibet	China	East Asia	E		
A	5		m26	Tibetan terrier	Tibet	China	East Asia	E		
A	5		m28	Tibetan terrier	Tibet	China	East Asia	E		
A	5		m29	Tibetan terrier	Tibet	China	East Asia	E		
A	5		m31	Tibetan terrier	Tibet	China	East Asia	E		
A	5		Oryu11	Ryukyu		Japan	East Asia	E	D83623	
A	6		R30	Thai ridgeback	Thailand	Southeast Asia	East Asia	E		
A	7		P67	Thai ridgeback	Thailand	Southeast Asia	East Asia	E		
A	8		P63	Thai ridgeback	Thailand	Southeast Asia	East Asia	E		
A	11		m10	Chow-chow		China	East Asia	E		
A	11		m4	Pekingese		China	East Asia	E		
A	11		m6	Pekingese		China	East Asia	E		
A	11		m7	Pekingese		China	East Asia	E		
A	11		5708sc		Sichuan	China	East Asia	E		
A	11		5713sc		Sichuan	China	East Asia	E		
A	11		5715sc		Sichuan	China	East Asia	E		
A	11		5718sc		Sichuan	China	East Asia	E		
A	11		5725sc		Sichuan	China	East Asia	E		
A	11		5728sc		Sichuan	China	East Asia	E		
A	11		5729sc		Sichuan	China	East Asia	E		
A	11		5734sc		Sichuan	China	East Asia	E		
A	11		5740sc		Sichuan	China	East Asia	E		
A	11		5742sc		Sichuan	China	East Asia	E		
A	11		5745sc		Sichuan	China	East Asia	E		
A	11		5746sc		Sichuan	China	East Asia	E		
A	11		5754ti		Tibet	China	East Asia	E		
A	11		5755ti		Tibet	China	East Asia	E		
A	11		5798sx		Shanxi	China	East Asia	E		

A	11		5806dl		Liaoning	China	East Asia	E	
A	11		5842sx		Shanxi	China	East Asia	E	
A	11		5843sx		Shanxi	China	East Asia	E	
A	11		5844sx		Shanxi	China	East Asia	E	
A	11		5853sx		Shanxi	China	East Asia	E	
A	11		Oaki1	Akita		Japan	East Asia	E	D83627
A	11		Tmik.a	Mikawa		Japan	East Asia	E	AB007385
A	11		Tmik.b	Mikawa		Japan	East Asia	E	AB007385
A	11		Oshi1	Shiba		Japan	East Asia	E	D83627
A	11		Oshi2	Shiba		Japan	East Asia	E	D83627
A	11		Tshik.b	Shikoku		Japan	East Asia	E	AB007385
A	11		P80	Jindo		Korea	East Asia	E	
A	11		P81	Jindo		Korea	East Asia	E	
A	11		P82	Jindo		Korea	East Asia	E	
A	11		P83	Jindo		Korea	East Asia	E	
A	11		P85	Jindo		Korea	East Asia	E	
A	11		P87	Pungsan		Korea	East Asia	E	
A	11		P64	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	11		Indo2		Indonesia	Southeast Asia	East Asia	E	
A	11		m36		Thailand	Southeast Asia	East Asia	E	
A	12		5808dl		Liaoning	China	East Asia	E	
A	15		P84	Jindo		Korea	East Asia	E	
A	17		m17	Mops		China	East Asia	E	
A	17		m19	Mops		China	East Asia	E	
A	17		5799sx		Shanxi	China	East Asia	E	
A	17		Oaki6	Akita		Japan	East Asia	E	D83609,D83617
A	17		Ohok2	Hokaido		Japan	East Asia	E	D83609,D83617
A	17		Ohok3	Hokaido		Japan	East Asia	E	D83609,D83617
A	17		Ohok4	Hokaido		Japan	East Asia	E	D83609,D83617
A	17		Thok.a	Hokkaido		Japan	East Asia	E	AB007382
A	17		Tkai.b	Kai		Japan	East Asia	E	AB007382
A	17		Okish1	Kishu		Japan	East Asia	E	D83609,D83617
A	17		Oshi28	Shiba		Japan	East Asia	E	D83609,D83617
A	17		Oshiko1	Shikoku		Japan	East Asia	E	D83609,D83617
A	18		NY32	Chinese crested		China	East Asia	E	
A	18		R94	Chinese crested		China	East Asia	E	
A	18		R95	Chinese crested		China	East Asia	E	
A	18		5757ti		Tibet	China	East Asia	E	
A	18		5792sx		Shanxi	China	East Asia	E	
A	18		Oaki2	Akita		Japan	East Asia	E	D83633
A	18		Ohok1	Hokkaido		Japan	East Asia	E	D83633
A	18		Oiki1	Iki		Japan	East Asia	E	D83633
A	18		Oiki2	Iki		Japan	East Asia	E	D83633
A	18		Okai1	Kai		Japan	East Asia	E	D83633
A	18		Oshi12	Shiba		Japan	East Asia	E	D83633
A	18		Oshi13	Shiba		Japan	East Asia	E	D83633
A	18		Oshi14	Shiba		Japan	East Asia	E	D83633
A	18		Oshi15	Shiba		Japan	East Asia	E	D83633
A	18		P65	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	18		m3		Indonesia	Southeast Asia	East Asia	E	
A	19		5748sh		Sichuan	China	East Asia	E	
A	19		5749sc		Sichuan	China	East Asia	E	
A	19		5801sx		Shanxi	China	East Asia	E	
A	19		5804sc		Sichuan	China	East Asia	E	
A	19		5807dl		Liaoning	China	East Asia	E	
A	19		Oryu1	Ryukyu		Japan	East Asia	E	D83618
A	19		Oryu2	Ryukyu		Japan	East Asia	E	D83618
A	19		Oryu3	Ryukyu		Japan	East Asia	E	D83618
A	19		Oryu4	Ryukyu		Japan	East Asia	E	D83618
A	22		m30	Tibetan terrier	Tibet	China	East Asia	E	

A	29		5709sc		Sichuan	China	East Asia	E	
A	29		5710sc		Sichuan	China	East Asia	E	
A	29		5726sc		Sichuan	China	East Asia	E	
A	29		5812gx		Guangxi	China	East Asia	E	
A	29		5813gx		Guangxi	China	East Asia	E	
A	29		Oaki4	Akita		Japan	East Asia	E	D83600
A	29		Oaki5	Akita		Japan	East Asia	E	D83600
A	29		Thok.b	Hokkaido		Japan	East Asia	E	AB007383
A	29		Tshi.a	Shikoku		Japan	East Asia	E	AB007383
A	29		P58	Singing dog	New Guinea	Southeast Asia	East Asia	E	
A	29		Tind.b		Indonesia	Southeast Asia	East Asia	E	AB007383
A	29		Indo1		Indonesia	Southeast Asia	East Asia	E	
A	35		R29	Thai ridgeback	Thailand	Southeast Asia	East Asia	E	
A	38		m13	Chow-chow		China	East Asia	E	
A	38		5817gx		Guangxi	China	East Asia	E	
A	39		L66	Shiba inu		Japan	East Asia	E	
A	39		L68	Shiba inu		Japan	East Asia	E	
A	42		Indo3		Cambodia	Southeast Asia	East Asia	E	
A	44		m22	Tibetan mastiff	Tibet	China	East Asia	E	
A	44		m25	Tibetan mastiff	Tibet	China	East Asia	E	
A	44		5706sc		Sichuan	China	East Asia	E	
A	44		5721sc		Sichuan	China	East Asia	E	
A	44		5731sc		Sichuan	China	East Asia	E	
A	44		5741sc		Sichuan	China	East Asia	E	
A	44		5815gx		Guangxi	China	East Asia	E	
A	44		m38		Thailand	Southeast Asia	East Asia	E	
A	45		m23	Tibetan mastiff	Tibet	China	East Asia	E	
A	45		m24	Tibetan mastiff	Tibet	China	East Asia	E	
A	46		m37		Thailand	Southeast Asia	East Asia	E	
A	47		m124		Filipines	Southeast Asia	East Asia	E	
A	50	17	m20	Mops		China	East Asia	E	
A	51		5707sc		Sichuan	China	East Asia	E	
A	51		5716sc		Sichuan	China	East Asia	E	
A	51		5717sc		Sichuan	China	East Asia	E	
A	51		5722sc		Sichuan	China	East Asia	E	
A	51		5723sc		Sichuan	China	East Asia	E	
A	51		5730sc		Sichuan	China	East Asia	E	
A	51		5732sc		Sichuan	China	East Asia	E	
A	51		5735sc		Sichuan	China	East Asia	E	
A	51		5736sc		Sichuan	China	East Asia	E	
A	51		5737sc		Sichuan	China	East Asia	E	
A	51		5738sc		Sichuan	China	East Asia	E	
A	51		5739sc		Sichuan	China	East Asia	E	
A	51		5743sc		Sichuan	China	East Asia	E	
A	51		5744sc		Sichuan	China	East Asia	E	
A	51		5747sc		Sichuan	China	East Asia	E	
A	52		5823ti		Tibet	China	East Asia	E	
A	53		5827ti		Tibet	China	East Asia	E	
A	53		5828ti		Tibet	China	East Asia	E	
A	54		5756ti		Tibet	China	East Asia	E	
A	55		5848sx		Shanxi	China	East Asia	E	
A	56		5852sx		Shanxi	China	East Asia	E	
A	57		5719sc		Sichuan	China	East Asia	E	
A	58		5720sc		Sichuan	China	East Asia	E	
A	59		5703sc		Sichuan	China	East Asia	E	
A	59		5705sc		Sichuan	China	East Asia	E	
A	59		5711sc		Sichuan	China	East Asia	E	
A	59		5712sc		Sichuan	China	East Asia	E	
A	59		5724sc		Sichuan	China	East Asia	E	
A	60		5704sc		Sichuan	China	East Asia	E	
A	61	17	5785ah		Anhui	China	East Asia	E	
A	61	17	5786ah		Anhui	China	East Asia	E	
A	62		5818gx		Guangxi	China	East Asia	E	
A	64		Oshi27	Shiba		Japan	East Asia	E	D83629

A	64		Tkor.a			Korea	East Asia	E	AB007400, D83629
A	65		Oshitz1	Shi tzu	Tibet	China	East Asia	E	D83635
A	67		Ohok8	Hokkaido		Japan	East Asia	E	D83608
A	68		Oiki3	Iki		Japan	East Asia	E	D83628
A	68		Oshi16	Shiba		Japan	East Asia	E	D83628
A	68		Oshi17	Shiba		Japan	East Asia	E	D83628
A	68		Oshi18	Shiba		Japan	East Asia	E	D83628
A	68		Oshi19	Shiba		Japan	East Asia	E	D83628
A	68		Oshi20	Shiba		Japan	East Asia	E	D83628
A	68		Oshi21	Shiba		Japan	East Asia	E	D83628
A	68		Oshi22	Shiba		Japan	East Asia	E	D83628
A	68		Oshi23	Shiba		Japan	East Asia	E	D83628
A	68		Oshi24	Shiba		Japan	East Asia	E	D83628
A	68		TshiS.a	Shiba,Shinsu		Japan	East Asia	E	AB007389, D83628
A	68		TshiS.b	Shiba,Shinsu		Japan	East Asia	E	AB007389, D83628
A	69		Oshi25	Shiba		Japan	East Asia	E	D83631
A	71		Okish5	Kishu		Japan	East Asia	E	D83612
A	72		Oryu7	Ryukyu		Japan	East Asia	E	D83621
A	72		Oryu8	Ryukyu		Japan	East Asia	E	D83621
A	73		5803sx		Shanxi	China	East Asia	E	
A	73		5819gx		Guangxi	China	East Asia	E	
A	73		Tkis.a	Kishu		Japan	East Asia	E	AB007384, D83613
A	73		Tkis.b	Kishu		Japan	East Asia	E	AB007384, D83613
A	73		Okish3	Kishu		Japan	East Asia	E	D83613
A	74		TShiM.a	Shiba,Mino		Japan	East Asia	E	AB007386
A	75		Tind.a		Indonesia	Southeast Asia	East Asia	E	AB007398
A	75		m2		Indonesia	Southeast Asia	East Asia	E	
B	1		m5	Pekingese		China	East Asia	E	
B	1		H135	Tibetan spaniel	Tibet	China	East Asia	E	
B	1		H69	Tibetan spaniel	Tibet	China	East Asia	E	
B	1		m32	Tibetan spaniel	Tibet	China	East Asia	E	
B	1		5793sx		Shanxi	China	East Asia	E	
B	1		5795sx		Shanxi	China	East Asia	E	
B	1		5797sx		Shanxi	China	East Asia	E	
B	1		5802sx		Shanxi	China	East Asia	E	
B	1		5810dl		Liaoning	China	East Asia	E	
B	1		5814gx		Guangxi	China	East Asia	E	
B	1		5816gx		Guangxi	China	East Asia	E	
B	1		5851sx		Shanxi	China	East Asia	E	
B	1		Tkai.a	Kai		Japan	East Asia	E	AB007387, AB007391
B	1		Oryu10	Ryukyu		Japan	East Asia	E	D83604,D8 3622
B	1		Oryu9	Ryukyu		Japan	East Asia	E	D83604,D8 3622
B	1		Tsh.b	Shiba,Mino		Japan	East Asia	E	AB007387, AB007391
B	1		m1		Indonesia	Southeast Asia	East Asia	E	
B	1		m129		Cambodia	Southeast Asia	East Asia	E	
B	2	1	5809dl		Liaoning	China	East Asia	E	
B	4		P17	Pariah dog	Thailand	Southeast Asia	East Asia	E	
B	5		Taki.a	Akita		Japan	East Asia	E	AB007380
B	5		L45	Akita inu		Japan	East Asia	E	
B	5		Oryu5	Ryukyu		Japan	East Asia	E	D83619
B	5		P86	Pungsan		Korea	East Asia	E	
B	6		Oaki3	Akita		Japan	East Asia	E	D83601
B	11		R96	Chinese crested		China	East Asia	E	
B	12		Okish2	Kishu		Japan	East Asia	E	D83620
B	12		Oryu6	Ryukyu		Japan	East Asia	E	D83620
B	13		5805dl		Liaoning	China	East Asia	E	
B	14		Oaki7	Akita		Japan	East Asia	E	D83607
B	14		Oaki8	Akita		Japan	East Asia	E	D83607

B	14		Oaki9	Akita		Japan	East Asia	E	D83607
B	14		Ohok5	Hokkaido		Japan	East Asia	E	D83607
B	14		Ohok6	Hokkaido		Japan	East Asia	E	D83607
B	14		Ohok7	Hokkaido		Japan	East Asia	E	D83607
B	14		Oiki4	Iki		Japan	East Asia	E	D83607
B	14		Oiki5	Iki		Japan	East Asia	E	D83607
B	16		Oshitz2	Shi tzu	Tibet	China	East Asia	E	D83634
B	17		Tmon.a			Mongolia	East Asia	E	AB007402
C	1		5800sx		Shanxi	China	East Asia	E	
C	1		Tryu.a	Ryukyu		Japan	East Asia	E	AB007388
C	1		Tryu.b	Ryukyu		Japan	East Asia	E	AB007388
C	1		Oryu12	Ryukyu		Japan	East Asia	E	D83624,D83638
C	2	1	5714sc		Sichuan	China	East Asia	E	
C	2	1	5794sx		Shanxi	China	East Asia	E	
C	2	1	Oshiko2	Shikoku		Japan	East Asia	E	D83636
C	3		Opek	Pekingese		China	East Asia	E	D83630
C	3		m8	Pekingese		China	East Asia	E	
C	3		Oshi10	Shiba		Japan	East Asia	E	D83630
C	3		Oshi11	Shiba		Japan	East Asia	E	D83630
C	3		Oshi3	Shiba		Japan	East Asia	E	D83630
C	3		Oshi4	Shiba		Japan	East Asia	E	D83630
C	3		Oshi5	Shiba		Japan	East Asia	E	D83630
C	3		Oshi6	Shiba		Japan	East Asia	E	D83630
C	3		Oshi7	Shiba		Japan	East Asia	E	D83630
C	3		Oshi8	Shiba		Japan	East Asia	E	D83630
C	3		Oshi9	Shiba		Japan	East Asia	E	D83630
C	3		L63	Shiba inu		Japan	East Asia	E	
C	3		L67	Shiba inu		Japan	East Asia	E	
C	3		P66		Vietnam	Southeast Asia	East Asia	E	
C	5		5787sx		Shanxi	China	East Asia	E	
C	5		Tmon.b			Mongolia	East Asia	E	AB007403
C	7		5796sx		Shanxi	China	East Asia	E	
E	1		Oshi26	Shiba		Japan	East Asia	E	D83632
E	1		P77	Pungsan		Korea	East Asia	E	
E	1		Tkor.b			Korea	East Asia	E	AB007401
F	1		Okish4	Kishu		Japan	East Asia	E	D83611
F	3		Tak.b	Akita		Japan	East Asia	E	AB007381
A	1		H52	Border collie		Britain	Europe	W	
A	1		H53	Border collie		Britain	Europe	W	
A	1		R105	Border collie		Britain	Europe	W	
A	1		R106	Border collie		Britain	Europe	W	
A	1		Ocol	Collie		Britain	Europe	W	D83603
A	1		NY45	Collie		Britain	Europe	W	
A	1		L16	Working kelpie		Britain	Europe	W	
A	1		L26	Buhund		Scandinavia	Europe	W	
A	1		L62	Buhund		Scandinavia	Europe	W	
A	2		Tpoin	Pointer		Britain	Europe	W	AB007393
A	2		H13	setter Irish		Britain	Europe	W	
A	2		H56	setter Irish		Britain	Europe	W	
A	2		NY12	terrier West highland		Britain	Europe	W	
A	2		H67	Leonberger		Continent	Europe	W	
A	2		m130	Leonberger		Continent	Europe	W	
A	2		m131	Leonberger		Continent	Europe	W	
A	2		m132	Leonberger		Continent	Europe	W	
A	2		m133	Leonberger		Continent	Europe	W	
A	2		L28	Finnish spitz		Scandinavia	Europe	W	
A	2		L41	Icelandic sheepdog		Scandinavia	Europe	W	
A	2		R93	Icelandic sheepdog		Scandinavia	Europe	W	
A	2		r19	Norrbottenspets		Scandinavia	Europe	W	
A	11		H85	Fox terrier		Britain	Europe	W	
A	11		L22	Pointer		Britain	Europe	W	
A	11		H50	terrier Border		Britain	Europe	W	
A	11		H51	terrier Border		Britain	Europe	W	
A	11		L25	terrier Kerry blue		Britain	Europe	W	
A	11		H22	Whippet		Britain	Europe	W	
A	11		L8	Basset griffon		Continent	Europe	W	

A	11		NY53	Borzoi		Continent	Europe	W	
A	11		R41	Drever		Continent	Europe	W	
A	11		R42	Drever		Continent	Europe	W	
A	11		R79	Gos d'atura Catalan		Continent	Europe	W	
A	11		R86	Mudi		Continent	Europe	W	
A	11		H3	Papillon		Continent	Europe	W	
A	11		R77	Pyreneean mastiff		Continent	Europe	W	
A	11		H12	Rottweiler		Continent	Europe	W	
A	11		H44	Rottweiler		Continent	Europe	W	
A	11		NY72	Rottweiler		Continent	Europe	W	
A	11		NY73	Rottweiler		Continent	Europe	W	
A	11		NY74	Rottweiler		Continent	Europe	W	
A	11		NY75	Rottweiler		Continent	Europe	W	
A	11		NY78	Rottweiler		Continent	Europe	W	
A	11		NY81	Rottweiler		Continent	Europe	W	
A	11		L36	Västgötaspets		Continent	Europe	W	
A	11		L5	Västgötaspets		Continent	Europe	W	
A	11		L27	Buhund		Scandinavia	Europe	W	
A	11		L61	Buhund		Scandinavia	Europe	W	
A	11		H73	Icelandic sheepdog		Scandinavia	Europe	W	
A	11		L40	Icelandic sheepdog		Scandinavia	Europe	W	
A	11		H26	Norwegian elkhound		Scandinavia	Europe	W	
A	11		H94	Norwegian elkhound		Scandinavia	Europe	W	
A	16		H20	New Foundland		Britain	Europe	W	
A	16		H10	retriever Golden		Britain	Europe	W	
A	16		H64	retriever Golden		Britain	Europe	W	
A	16		R108	retriever Golden		Britain	Europe	W	
A	16		H5	retriever Labrador		Britain	Europe	W	
A	16		H54	retriever Labrador		Britain	Europe	W	
A	16		R44	retriever Labrador		Britain	Europe	W	
A	17		NY18	Cav. K. Charles spaniel		Britain	Europe	W	
A	17		H62	Norfolk terrier		Britain	Europe	W	
A	17		H49	retriever Chesapeake Bay		Britain	Europe	W	
A	17		H57	retriever Flatcoated		Britain	Europe	W	
A	17		H18	retriever Labrador		Britain	Europe	W	
A	17		H19	retriever Labrador		Britain	Europe	W	
A	17		H32	retriever Labrador		Britain	Europe	W	
A	17		R116	retriever Labrador		Britain	Europe	W	
A	17		R43	retriever Labrador		Britain	Europe	W	
A	17		R45	retriever Labrador		Britain	Europe	W	
A	17		H99	German shepherd		Continent	Europe	W	
A	17		NY69	German shepherd		Continent	Europe	W	
A	17		R47	German shepherd		Continent	Europe	W	
A	17		H70	Leonberger		Continent	Europe	W	
A	17		Opug1	Pug		Continent	Europe	W	D83609,D8 3617
A	17		Opug2	Pug		Continent	Europe	W	D83609,D8 3617
A	17		L2	Finnish lapphund		Scandinavia	Europe	W	
A	17		R2	Finnish lapphund		Scandinavia	Europe	W	

A	17		L42	Icelandic sheepdog		Scandinavia	Europe	W	
A	18		Obea	Beagle		Britain	Europe	W	D83633
A	18		H41	Border collie		Britain	Europe	W	
A	18		H15	setter English		Britain	Europe	W	
A	18		H16	setter English		Britain	Europe	W	
A	18		L53	Beauceron		Continent	Europe	W	
A	18		NY94	Bracco Italiano		Continent	Europe	W	
A	18		NY95	Bracco Italiano		Continent	Europe	W	
A	18		Odal	Dalmatian		Continent	Europe	W	D83633
A	18		Tmal	Maltese		Continent	Europe	W	AB007392
A	18		R80	Maremmano Abruzzese		Continent	Europe	W	
A	18		Opoo	Poodle		Continent	Europe	W	D83633
A	18		R69	Pyreneisk vallhund		Continent	Europe	W	
A	19		Tger.a	German shepherd		Continent	Europe	W	AB007396
A	19		Tger.b	German shepherd		Continent	Europe	W	AB007396
A	19		H9	German shepherd		Continent	Europe	W	
A	19		H96	German shepherd		Continent	Europe	W	
A	19		H97	German shepherd		Continent	Europe	W	
A	19		NY68	German shepherd		Continent	Europe	W	
A	19		NY71	German shepherd		Continent	Europe	W	
A	19		NY90	German shepherd		Continent	Europe	W	
A	19		R46	German shepherd		Continent	Europe	W	
A	19		R89	German shepherd		Continent	Europe	W	
A	19		H77	Keeshond		Continent	Europe	W	
A	19		L48	Keeshond		Continent	Europe	W	
A	20		Opoi	Pointer		Britain	Europe	W	D83616
A	20		L24	terrier Irish soft coated wheaten		Britain	Europe	W	
A	20		L56	Maltesian pharaohound		Continent	Europe	W	
A	20		H33	Dachshound Wirehaired		Continent	Europe	W	
A	20		H66	Dachshound Wirehaired		Continent	Europe	W	
A	20		NY87	Dachshund		Continent	Europe	W	
A	20		NY89	Dachshund		Continent	Europe	W	
A	20		R32	Podenko ibicenco		Continent	Europe	W	
A	20		L21	Tervuerense		Continent	Europe	W	
A	22		TengS	English setter		Britain	Europe	W	AB007394
A	22		R37	Irish wolfhound		Britain	Europe	W	
A	22		R36	Scottish deerhound		Britain	Europe	W	
A	22		H47	Boxer		Continent	Europe	W	
A	22		L57	St Bernhard		Continent	Europe	W	
A	22		L58	St Bernhard		Continent	Europe	W	
A	23		L14	Borzoi		Continent	Europe	W	
A	24		H100	Irish wolfhound		Britain	Europe	W	
A	24		H101	Irish wolfhound		Britain	Europe	W	
A	24		NY63	Irish wolfhound		Britain	Europe	W	
A	24		Ogrpyr	Great Pyreneese		Continent	Europe	W	D83606
A	24		R48	Pyrene		Continent	Europe	W	
A	24		H74	Pyreneeer		Continent	Europe	W	
A	26		H61	Wirehaired foxterrier		Britain	Europe	W	
A	27		L19	Maremmano Abruzzese		Continent	Europe	W	
A	27		R76	Maremmano Abruzzese		Continent	Europe	W	
A	27		H68	Lundehund		Scandinavia	Europe	W	

A	27		L37	Lundehund		Scandinavia	Europe	W	
A	28		Tbea	Beagle		Britain	Europe	W	AB007390
A	28		H84	Cav. K. Charles spaniel		Britain	Europe	W	
A	30		R51	Hamiltonstövare		Continent	Europe	W	
A	30		R6	Hamiltonstövare		Continent	Europe	W	
A	34		R34	Galgo Espanol		Continent	Europe	W	
A	36		R74	Pyreneer		Continent	Europe	W	
A	40		R85	Puli		Continent	Europe	W	
A	66		Ocav	Cav. K. Charles spaniel		Britain	Europe	W	D83602
A	70		Tshet	Shetland sheepdog		Britain	Europe	W	AB007395, D83626
A	70		Oshel1	Shetland sheepdog		Britain	Europe	W	D83626
A	70		Oshel2	Shetland sheepdog		Britain	Europe	W	D83626
B	1		H11	Otterhound		Britain	Europe	W	
B	1		H38	retriever Golden		Britain	Europe	W	
B	1		H45	retriever Golden		Britain	Europe	W	
B	1		R102	retriever Golden		Britain	Europe	W	
B	1		R103	retriever Golden		Britain	Europe	W	
B	1		NO1	retriever Labrador		Britain	Europe	W	
B	1		NY16	terrier Yorkshire		Britain	Europe	W	
B	1		L15	Working kelpie		Britain	Europe	W	
B	1		Tdach	Dachshund		Continent	Europe	W	AB007387, AB007391
B	1		NY88	Dachshund		Continent	Europe	W	
B	1		Tdob	Dobberman pinscher		Continent	Europe	W	AB007387, AB007391
B	1		Odob	Dobberman pinscher		Continent	Europe	W	D83604, D83622
B	1		NY82	Dobberman pinscher		Continent	Europe	W	
B	1		R59	Finsk stövare		Continent	Europe	W	
B	1		H6	Groenedael		Continent	Europe	W	
B	1		R8	Kooikerhondje		Continent	Europe	W	
B	1		L23	Weimaraner		Continent	Europe	W	
B	1		NY40	Buhund		Scandinavia	Europe	W	
B	1		L39	Finnish spitz		Scandinavia	Europe	W	
B	1		L60	Finnish spitz		Scandinavia	Europe	W	
B	1		R12	Finnish spitz		Scandinavia	Europe	W	
B	1		R14	Finnish spitz		Scandinavia	Europe	W	
B	1		R16	Finnish spitz		Scandinavia	Europe	W	
B	1		R17	Finnish spitz		Scandinavia	Europe	W	
B	1		L38	Norrbottenspets		Scandinavia	Europe	W	
B	1		L4	Norrbottenspets		Scandinavia	Europe	W	
B	1		r20	Norrbottenspets		Scandinavia	Europe	W	
B	3	1	R78	Kuvasz		Continent	Europe	W	
B	3	1	R13	Finnish spitz		Scandinavia	Europe	W	
B	6		NY10	Dachshound		Continent	Europe	W	
B	6		H81	dachshound Wirehaired		Continent	Europe	W	
B	6		L20	Dutch shepherd		Continent	Europe	W	
B	6		R84	Dutch shepherd		Continent	Europe	W	
B	7		NY83	D/S gårdshund		Continent	Europe	W	
B	8	7	H30	retriever Flatcoated		Britain	Europe	W	
B	12		R40	Affenpinscher		Continent	Europe	W	
C	1		L44	Pittbull		Britain	Europe	W	
C	1		H95	German shepherd		Continent	Europe	W	
C	1		H98	German shepherd		Continent	Europe	W	
C	1		NY11	German shepherd		Continent	Europe	W	
C	2	1	H48	terrier West highland		Britain	Europe	W	
C	3		H60	terrier Airedale		Britain	Europe	W	
C	3		H28	Riesenschnauzer		Continent	Europe	W	
C	3		H35	Riesenschnauzer		Continent	Europe	W	

C	3		H91	Jämthund		Scandinavia	Europe	W	
C	3		R92	Jämthund		Scandinavia	Europe	W	
C	3		L32	stövare Finsk		Scandinavia	Europe	W	
C	5		L18	Sarplaninac		Continent	Europe	W	
D	1		R52	Finnish lapphund		Scandinavia	Europe	W	
D	1		R53	Finnish lapphund		Scandinavia	Europe	W	
D	1		R90	Finnish lapphund		Scandinavia	Europe	W	
D	1		R91	Finnish lapphund		Scandinavia	Europe	W	
D	1		H37	Jämthund		Scandinavia	Europe	W	
D	1		H65	Jämthund		Scandinavia	Europe	W	
D	1		R1	Lappsck vallhund		Scandinavia	Europe	W	
D	1		H25	Norwegian elkhound		Scandinavia	Europe	W	
D	1		H93	Norwegian elkhound		Scandinavia	Europe	W	
D	1		R4	Norwegian elkhound		Scandinavia	Europe	W	
D	1		L3	Swedish lapphund		Scandinavia	Europe	W	
D	1		L33	Swedish lapphund		Scandinavia	Europe	W	
D	1		L34	Swedish lapphund		Scandinavia	Europe	W	
D	1		NY93	Swedish lapphund		Scandinavia	Europe	W	
D	2	1	R10	Finnish spitz		Scandinavia	Europe	W	
D	3	1	R50	Jämthund		Scandinavia	Europe	W	
D	3	1	L35	Lappsck vallhund		Scandinavia	Europe	W	
D	4		L1	Lappsck vallhund		Scandinavia	Europe	W	
D	6		R33	Galgo Espanol		Continent	Europe	W	
A	6		P55	Santal hound			India	W	
A	6		P57	Santal hound			India	W	
A	6		m58				India	W	
A	6		m59				India	W	
A	6		m61				India	W	
A	11		m128				India		
A	14		P56	Santal hound			India	W	
A	14		m56				India	W	
A	14		m57				India	W	
A	14		m60				India	W	
A	27		m42				India	W	
B	1		m43				India	W	
C	3		m62				India	W	
A	1		H92	Samoyed			Siberia	E	
A	1		m66	Samoyed			Siberia	E	
A	2		L31	Laika East Siberian			Siberia	E	
A	2		R5	Laika East Siberian			Siberia	E	
A	3		L29	Laika East Siberian			Siberia	E	
A	3		R9	Laika East Siberian			Siberia	E	
A	5		R22	Laika East Siberian			Siberia	E	
A	5		R23	Laika East Siberian			Siberia	E	
A	5		r27	Laika West Siberian			Siberia	E	
A	11		TsibH	Husky Siberian			Siberia	E	AB007385
A	13	12	R25	Laika West Siberian			Siberia	E	
A	18		H21	Samoyed			Siberia	E	
A	27		p33	Laika West Siberian			Siberia	E	
A	27		r26	Laika West Siberian			Siberia	E	
A	29		H90	Husky Siberian			Siberia	E	
A	29		L54	Husky Siberian			Siberia	E	

A	41		P35	Laika West Siberian			Siberia	E	
B	1		m65	Samoyed			Siberia	E	
B	1		m67	Samoyed			Siberia	E	
C	1		Osibh1	Husky Siberian			Siberia	E	D83624,D83638
C	1		m40	Husky Siberian			Siberia	E	
C	1		m68	Samoyed			Siberia	E	
C	4		p34	Laika West Siberian			Siberia	E	
F	2		Osibh2	Husky Siberian			Siberia	E	D83637
A	2		R72	Anatholian shepherd		Turkey	Southwest Asia	W	
A	9		Ny52	Saluki			Southwest Asia	W	
A	11		m54			Iran	Southwest Asia	W	
A	11		m76	Caanan dog		Israel	Southwest Asia	W	
A	11		m77	Caanan dog		Israel	Southwest Asia	W	
A	11		m78	Caanan dog		Israel	Southwest Asia	W	
A	11		m81	Caanan dog		Israel	Southwest Asia	W	
A	11		m82	Caanan dog		Israel	Southwest Asia	W	
A	11		m82	Caanan dog		Israel	Southwest Asia	W	
A	11		m102	Akbasch		Turkey	Southwest Asia	W	
A	11		m103	Akbasch		Turkey	Southwest Asia	W	
A	11		m104	Akbasch		Turkey	Southwest Asia	W	
A	11		m106	Akbasch		Turkey	Southwest Asia	W	
A	11		m107	Akbasch		Turkey	Southwest Asia	W	
A	11		m110	Akbasch		Turkey	Southwest Asia	W	
A	11		m111	Akbasch		Turkey	Southwest Asia	W	
A	11		m91	Kangal		Turkey	Southwest Asia	W	
A	11		m95	Kangal		Turkey	Southwest Asia	W	
A	11		m123	Taigan		uzbekistan	Southwest Asia	W	
A	11		r82	Kaukazkaia Outjarka			Southwest Asia	W	
A	11		R83	Kaukazkaia Outjarka			Southwest Asia	W	
A	11		P37	Saluki			Southwest Asia	W	
A	11		R98	Taigan			Southwest Asia	W	
A	12		Oafg	Afghan		Afghanistan	Southwest Asia	W	D83599
A	12		m122	Taigan			Southwest Asia	W	
A	12		R99	Taigan			Southwest Asia	W	
A	15		m116	Saluki		Saudi Arabia	Southwest Asia	W	
A	15		m109	Akbasch		Turkey	Southwest Asia	W	
A	16		R70	Anatholian shepherd		Turkey	Southwest Asia	W	
A	16		H82	Greyhound			Southwest Asia	W	
A	17		p1	Anatholian pharia		Turkey	Southwest Asia	W	

A	17		NY58	Greyhound			Southwest Asia	W	
A	18		m49			Iran	Southwest Asia	W	
A	18		m112	Akbasch		Turkey	Southwest Asia	W	
A	19		m47			Iran	Southwest Asia	W	
A	19		m51			Iran	Southwest Asia	W	
A	19		m52			Iran	Southwest Asia	W	
A	19		m55			Iran	Southwest Asia	W	
A	19		m79	Caanan dog		Israel	Southwest Asia	W	
A	19		m39			tadzikistan	Southwest Asia	W	
A	20		m75	Caanan dog		Israel	Southwest Asia	W	
A	20		m80	Caanan dog		Israel	Southwest Asia	W	
A	20		m108	Akbasch		Turkey	Southwest Asia	W	
A	21		m53			Iran	Southwest Asia	W	
A	25		m45			Iran	Southwest Asia	W	
A	25		m46			Iran	Southwest Asia	W	
A	26		P38	Saluki		Saudi Arabia	Southwest Asia	W	
A	26		P39	Saluki			Southwest Asia	W	
A	27		m50			Iran	Southwest Asia	W	
A	43		p36	Saluki		Saudi Arabia	Southwest Asia	W	
A	49		m99	Kangal		Turkey	Southwest Asia	W	
B	1		m48			Iran	Southwest Asia	W	
B	1		m119	Saluki		Saudi Arabia	Southwest Asia	W	
B	1		m94	Kangal		Turkey	Southwest Asia	W	
B	1		R57	Saluki			Southwest Asia	W	
B	2	1	H102	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	H29	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	L13	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	NY57	Afghan		Afghanistan	Southwest Asia	W	
B	2	1	m35	Saluki		Dubai	Southwest Asia	W	
B	2	1	m125			Iran	Southwest Asia	W	
B	2	1	m127			Iran	Southwest Asia	W	
B	2	1	P49	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P50	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P51	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P53	Canaan dog		Israel	Southwest Asia	W	
B	2	1	P54	Canaan dog		Israel	Southwest Asia	W	
B	2	1	m113	Tazi		kazakstan	Southwest	W	

							Asia		
B	2	1	m34	Saluki		Syria	Southwest Asia	W	
B	2	1	m105	Akbasch		Turkey	Southwest Asia	W	
B	2	1	L11	Saluki			Southwest Asia	W	
B	2	1	m115	Saluki			Southwest Asia	W	
B	2	1	NY50	Saluki			Southwest Asia	W	
B	2	1	R56	Saluki			Southwest Asia	W	
B	2	1	r58	Saluki			Southwest Asia	W	
B	2	1	m121	Taigan			Southwest Asia	W	
B	2	1	R101	Taigan			Southwest Asia	W	
B	6		P61	Canaan dog		Israel	Southwest Asia	W	
B	6		P62	Canaan dog		Israel	Southwest Asia	W	
B	9		P40	Canaan dog		Israel	Southwest Asia	W	
B	9		P41	Canaan dog		Israel	Southwest Asia	W	
B	10	6	R81	Kaukazkaia Outjarka			Southwest Asia	W	
B	15		Osal	Saluki			Southwest Asia	W	D83625
C	2	1	m126			Iran	Southwest Asia	W	
C	6	5	m101	Kangal		Turkey	Southwest Asia	W	
C	6	5	m92	kangal		Turkey	Southwest Asia	W	
C	6	5	m96	Kangal		Turkey	Southwest Asia	W	
C	6	5	m97	Kangal		Turkey	Southwest Asia	W	
D	5		m100	Kangal		Turkey	Southwest Asia	W	
D	5		m98	Kangal		Turkey	Southwest Asia	W	

Table S3. The number and proportion of individuals in different populations having haplotypes shared between East and West for clades A, B and C.

	Clade A	Clade B	Clade C
Region	Number of individuals with shared types/individuals (%)	Number of individuals with shared types/individuals (%)	Number of individuals with shared types/individuals (%)
East	112/231 (48.5)	24/41(58.8)	26/28 (92.9)
West	169/235 (71.9)	68/73(93.2)	19/19 (100)
East Asia	96/192 (50.0)	22/39(56.4)	23/24 (95.8)
Europe	106/140 (75.7)	34/36(94.4)	12/12 (100)
SW Asia	37/51 (72.5)	29/32(90.6)	5/5 (100)
China excl. Tibet	43/87 (49.4)	9/12(75.0)	6/7 (85.7)
Tibet	9/19 (47.4)	<5	0
SE Asia	6/17 (35.3)	<5	<5
Japan	32/60 (53.3)	7/18(38.9)	15/15 (100)
Siberia	11/17 (64.7)	<5	<5
Europe continent	53/70 (77.9)	15/16(93.8)	9/9 (100)
Britain	34/53 (64.2)	8/9(88.9)	<5
Africa	18/30 (60.0)	<5	<5
America	4/25 (16.0)	0	0

Supporting references and notes

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