

Table S1: Inbreeding coefficients calculated from SNP data, whole genome sequencing (WGS), and pedigree analysis of entire reference pedigrees, 10-generation pedigrees, and 5-generation pedigrees. Percent identity to the Boxer reference is the mean of all SNP-genotyped dogs of each breed.

Breed	Abbr.	SNP	WGS	PED _{all}	PED _{10-gen}	PED _{5-gen}
Afghan Hound	AFGH	0.332				
Airedale Terrier	AIRT		0.467			
Akita	AKIT	0.347				
Alaskan Malamute	AMAL	0.313	0.199			
American Cocker Spaniel	ACKR	0.378	0.378			
American Rat Terrier	ARTR		0.383			
Australian Cattle Dog	ACD		0.185	0.067	0.064	0.038
Australian Shepherd	AUSS	0.207				
Australian Terrier	AUST	0.260				
Basenji	BSJI	0.536	0.571	0.221	0.118	0.059
Basset Hound	BASS	0.357				
Beagle	BEAG	0.244	0.084			
Bearded Collie	BRDC		0.261			
Belgian Malinois	BMAL		0.265			
Belgian Shepherd	BELS	0.301	0.286	0.193	0.126	0.064
Belgian Tervuren	TERV	0.264	0.357			
Bernese Mountain Dog	BMD	0.350	0.314	0.197	0.061	0.022
Black Russian Terrier	BRTR		0.263			
Bloodhound	BLDH	0.431	0.316			
Border Collie	BORD	0.210	0.254			
Border Terrier	BORT		0.379			
Borzoi	BORZ	0.311	0.265	0.128	0.086	0.054
Boston Terrier	BOST	0.225	0.316			
Bouvier des Flandres	BOUV		0.314			
Boxer	BOX	0.357				
Briard	BRIA	0.298				
Brittany	BRIT	0.263	0.331			
Bull Mastiff	BULM	0.345				
Bull Terrier	BULT	0.579				
Bulldog	BULD	0.373	0.454			
Cairn Terrier	CAIR	0.193				
Cardigan Welsh Corgi	CARD	0.250				
Cavalier King Charles Spaniel	CKCS	0.421				
Chihuahua	CHIH	0.113	0.099			
Chinese Crested	CRES		0.374			
Chinese Shar Pei	SHAR	0.236				
Chow Chow	CHOW	0.370	0.374			
Clumber Spaniel	CLSP		0.475			
Collie	COLL	0.481				
Dachshund	DACH	0.203	0.422			
Doberman Pinscher	DOBP	0.431	0.385			

English Cocker Spaniel*	ECKR	0.390	0.494			
English Springer Spaniel	ESSP	0.312	0.352			
Eurasier	EURA		0.254			
Flat Coated Retriever	FCR	0.354	0.324			
French Bulldog	FBUL	0.281	0.287			
German Shepherd Dog	GSD	0.373	0.479			
German Shorthaired Pointer	GSHP	0.176				
German Wirehaired Pointer	GWHP		0.223			
Giant Schnauzer	GSNZ	0.252				
Glen of Imaal Terrier*	GLEN	0.277				
Golden Retriever	GOLD	0.284	0.218	0.160	0.079	0.027
Great Dane	DANE	0.272	0.377			
Great Pyrenees	GPYR	0.350	0.381			
Greater Swiss Mountain Dog	GSMD		0.420			
Greyhound	GREY	0.300	0.314			
Havanese	HAVA	0.178				
Ibizan Hound	IBIZ	0.289				
Irish Setter	ISET		0.319			
Irish Terrier	IRTR		0.322			
Irish Water Spaniel	IWSP	0.267	0.323			
Irish Wolfhound	IWOF	0.426	0.399			
Italian Greyhound	ITGY	0.292	0.338			
Jack Russell Terrier	JRT		0.117			
Kerry Blue Terrier	KERY		0.425			
Komondor	KOMO		0.316			
Kromforlander	KROM		0.468			
Kuvasz	KUVZ	0.171				
Labrador Retriever	LAB	0.217	0.211	0.082	0.073	0.026
Lagotto Romagnolo	LAGO		0.378			
Leonberger	LEON	0.316				
Mastiff	MAST	0.335	0.270			
Miniature Bull Terrier	MBLT	0.507				
Miniature Pinscher	MPIN	0.307				
Miniature Poodle	MPOO	0.237	0.255			
Miniature Schnauzer	MSNZ	0.452	0.564			
Newfoundland	NEWF	0.288				
Norwegian Lundehund	NLUN		0.868			
Norwich Terrier	NOWT	0.408		0.267	0.167	0.057
Nova Scotia Duck Tolling Retriever	NSDT		0.205	0.266	0.251	0.034
Old English Sheepdog	OES	0.276				
Papillon	PAPI	0.179		0.059	0.051	0.031
Pekingese	PEKE	0.356	0.379			

Pembroke Welsh Corgi	PEMB	0.301	0.329			
Petit Basset Griffon Vendeen	PBGV	0.236				
Pointer	PNTR		0.255			
Pomeranian	POM	0.180				
Portuguese Podengo	POPO		0.166			
Portuguese Water Dog	PTWD	0.270	0.118	0.176	0.162	0.052
Pug	PUG	0.442	0.383			
Rhodesian Ridgeback	RHOD		0.331			
Rottweiler	ROTT	0.337	0.280			
Saint Bernard	STBD	0.296	0.214			
Saluki	SALU	0.234	0.159			
Samoyed	SAMO	0.301	0.281			
Scottish Deerhound	DEER	0.459	0.420			
Scottish Terrier	SCOT	0.346	0.322			
Shetland Sheepdog	SSHP	0.386	0.354			
Shih Tzu	SHIH	0.325				
Siberian Husky	HUSK	0.327	0.100			
Sloughi	SLOU		0.065			
Soft Coated Wheaten Terrier	SCWT		0.474			
Spanish Water Dog	SPWD		0.117			
Staffordshire Bull Terrier	STAF	0.299				
Standard Poodle	SPOO	0.181	0.249			
Standard Schnauzer	SSNZ	0.255	0.283			
Tibetan Mastiff	TIBM		0.118			
Tibetan Terrier	TIBT		0.140			
Toy Poodle	TPOO	0.182	0.117			
West Highland White Terrier	WHWT	0.357	0.419			
Whippet	WHIP	0.324				
Yorkshire Terrier	YORK	0.254	0.147			

* SNP F-values for ECKR and GLEN were calculated from 9 individuals instead of 1

Table S2: Whole genome sequence quality metrics and sources

Name	Variants	Average Depth	Source
ACKR01	5,054,866	33.713	Decker et al. 2015
ARTR01	5,099,158	40.002	PRJNA318762
AIRT02	5,204,116	28.623	PRJNA263947
AMAL01	4,736,533	37.749	PRJNA318762
ACD01	4,935,757	17.836	PRJEB13468
BEAG01	4,797,005	40.359	Decker et al. 2015
BELS01	4,973,385	35.936	Decker et al. 2015
BLDH01	4,999,169	33.431	Decker et al. 2015
BMAL01	5,136,968	9.438	Wang et al. 2013
BMD01	4,979,710	36.058	Decker et al. 2015
BMD02	5,065,175	39.096	PRJNA318762
BORD02	5,031,466	16.033	Decker et al. 2015
BORT01	5,113,993	21.11	PRJNA263947
BORZ01	4,962,089	40.516	PRJNA318762
BOST01	5,151,014	41.779	PRJNA318762
BOUV01	5,027,893	46.821	PRJNA318762
BRDC01	5,016,518	17.328	PRJEB13468
BRIT01	5,243,695	8.478	Decker et al. 2015
BRTR01	5,026,403	29.47	PRJNA263947
BSJI01	5,386,656	5.201	Freedman et al. 2014
BULD01	5,327,606	39.587	Decker et al. 2015
CHIH01	4,796,797	41.391	Decker et al. 2015
CHOW01	5,489,944	4.457	Decker et al. 2015
CHOW02	4,733,596	46.627	Decker et al. 2015
CLSP01	4,830,777	15.489	Decker et al. 2015
CRES03	4,696,633	19.026	PRJNA261736
DACH01	5,173,689	15.057	Decker et al. 2015
DANE01	5,093,550	43.995	Decker et al. 2015
DEER01	5,133,707	22.681	PRJNA263947
DOBP01	4,690,581	26.809	Decker et al. 2015
ECKR02	5,527,883	6.285	PRJNA263947
ESSP01	5,084,780	25.765	PRJNA263947
EUR01	5,002,113	10.735	PRJEB6079
FBUL01	5,173,531	18.228	PRJEB13468
FCR01	4,999,924	47.452	Decker et al. 2015
FCR02	5,038,664	36.299	Decker et al. 2015
FCR03	5,063,014	36.002	PRJNA318762
GOLD01	4,977,578	30.888	Decker et al. 2015
GPYR01	5,146,474	16.122	Decker et al. 2015
GREY07	5,045,975	36.383	PRJNA247491
GREY01	5,221,305	14.221	Decker et al. 2015

GSD01	5,354,584	8.636	Wang et al. 2013
GSMD01	5,117,279	36.148	PRJNA318762
GWHP01	4,954,916	20.896	PRJEB13468
HUSK01	4,648,407	46.636	Decker et al. 2015
IRTR01	5,094,366	18.957	PRJEB13468
ISET01	5,007,794	38.254	PRJNA318762
ITGY01	5,091,056	20.088	Decker et al. 2015
IWOF01	5,111,487	34.234	Decker et al. 2015
IWSP01	4,965,143	42.841	PRJNA318762
IWSP02	5,005,180	42.469	PRJNA318762
IWSP03	5,109,996	41.355	PRJNA318762
JRT01	4,921,017	24.849	PRJNA263947
KERY01	5,216,770	22.316	PRJNA263947
KOMO01	4,998,899	39.872	PRJNA318762
KROM01	5,200,404	22.237	PRJEB6076
LAB04	5,000,603	28.266	PRJNA263947
LAGO01	5,479,537	6.462	PRJEB13468
MAST01	5,041,589	50.977	Decker et al. 2015
MPOO01	4,946,955	41.789	PRJNA318762
MSNZ01	5,708,610	5.265	PRJNA263947
NLUN01	5,546,324	20.074	PRJNA186960
NSDT01	4,929,427	21.895	PRJNA263947
PEKE01	4,995,474	44.938	Decker et al. 2015
PEMB02	5,086,521	21.515	PRJNA263947
PNTR01	5,036,900	18.147	Decker et al. 2015
POPO01	4,909,232	23.586	PRJNA263947
PTWD01	4,759,535	36.337	PRJNA318762
PUG05	5,251,865	12.06	Decker et al. 2015
RHOD01	5,086,725	18.091	Decker et al. 2015
ROTT01	4,968,608	33.229	Decker et al. 2015
ROTT04	5,021,172	40.855	PRJNA318762
SALU01	4,750,584	46.554	Decker et al. 2015
SAMO01	4,892,384	40.68	PRJNA318762
SCOT01	5,097,777	39.698	Decker et al. 2015
SCOT02	4,914,841	37.802	PRJNA318762
SCWT01	5,350,393	14.183	PRJNA263947
SLOU01	4,740,780	19.944	PRJNA318762
SPOO01	5,090,679	11.104	Decker et al. 2015
SPWD01	4,888,534	14.514	PRJEB7903
SSHP01	5,028,406	36.223	Decker et al. 2015
SSNZ01	5,070,274	14.846	PRJNA263947
STBD01	4,938,360	34.199	Decker et al. 2015
TERV01	5,053,248	32.35	Decker et al. 2015

TIBM01	4,849,992	10.493	Wang et al. 2013
TIBT01	4,818,133	24.428	PRJNA263947
TPOO01	4,825,194	41.563	Decker et al. 2015
WHWT01	5,278,603	9.701	Decker et al. 2015
WHWT02	5,122,584	37.589	PRJNA318762
YORK01	4,924,101	19.177	PRJNA318762

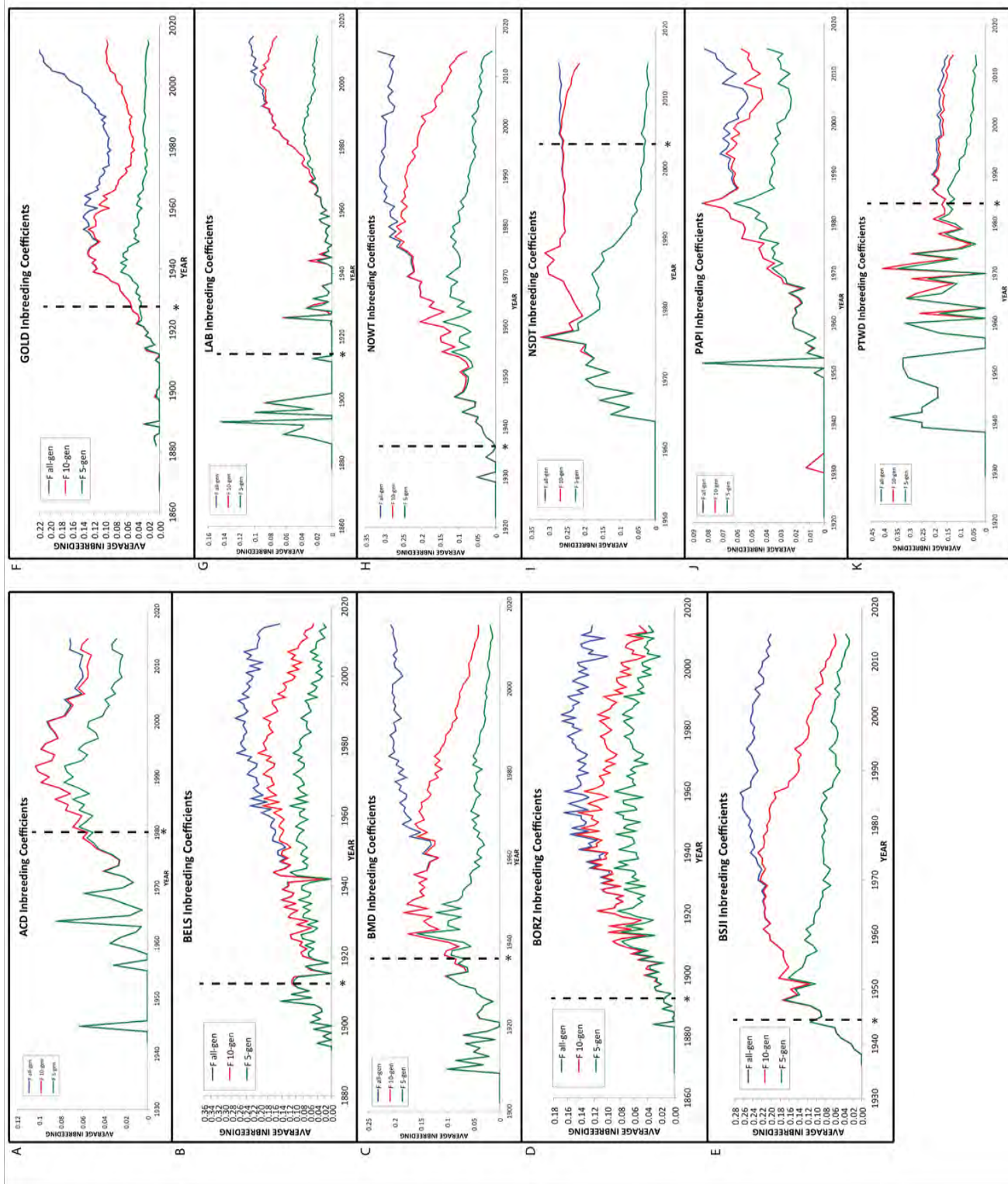


Figure S1: Inbreeding coefficients over time for 11 pedigree breeds. Calculations of F completed using the entire reference pedigree, or the most recent 10 or 5 generations.

* indicate the year at which the breed was recognized by the AKC. Australian Cattle Dog (ACD) = 1980, Belgian Sheepdog (BELS) = 1912, Bernese Mountain Dog (BMD) = 1937, Borzoi (BORZ) = 1891, Basenji (BSJI) = 1944, Golden Retriever (GOLD) = 1920, Labrador Retriever (LAB) = 1917, Norwich Terrier (NOWT) = 1936, Nova Scotia Duck Tolling Retriever (NSDT) = 2003, Papillon (PAPI) = 1915, Portuguese Water Dog (PTWD) = 1983.

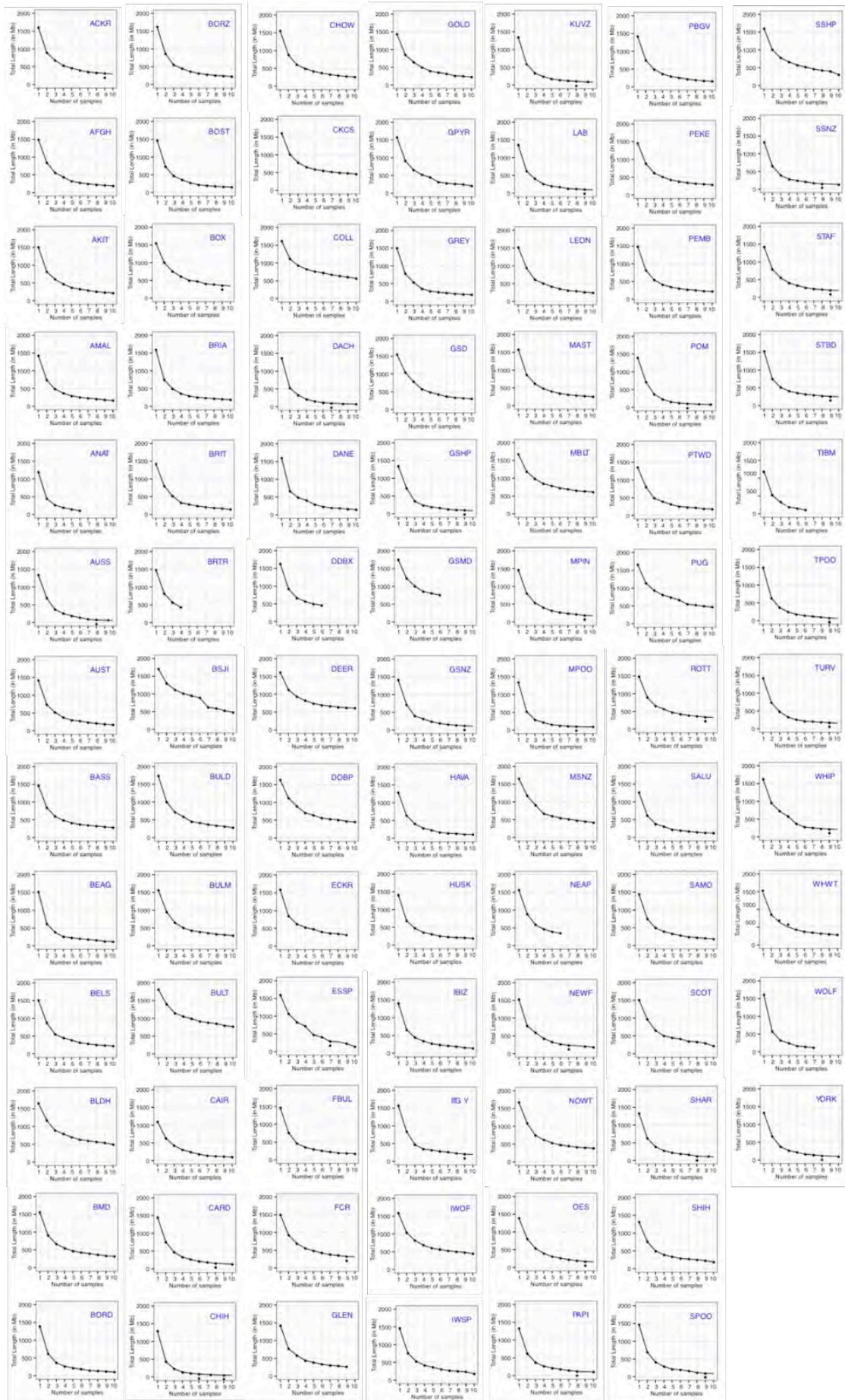


Figure S2: Single breed graphs displaying the decrease in shared LnP with SNP chip data from an additional same-breed dog.