Supplemental Materials

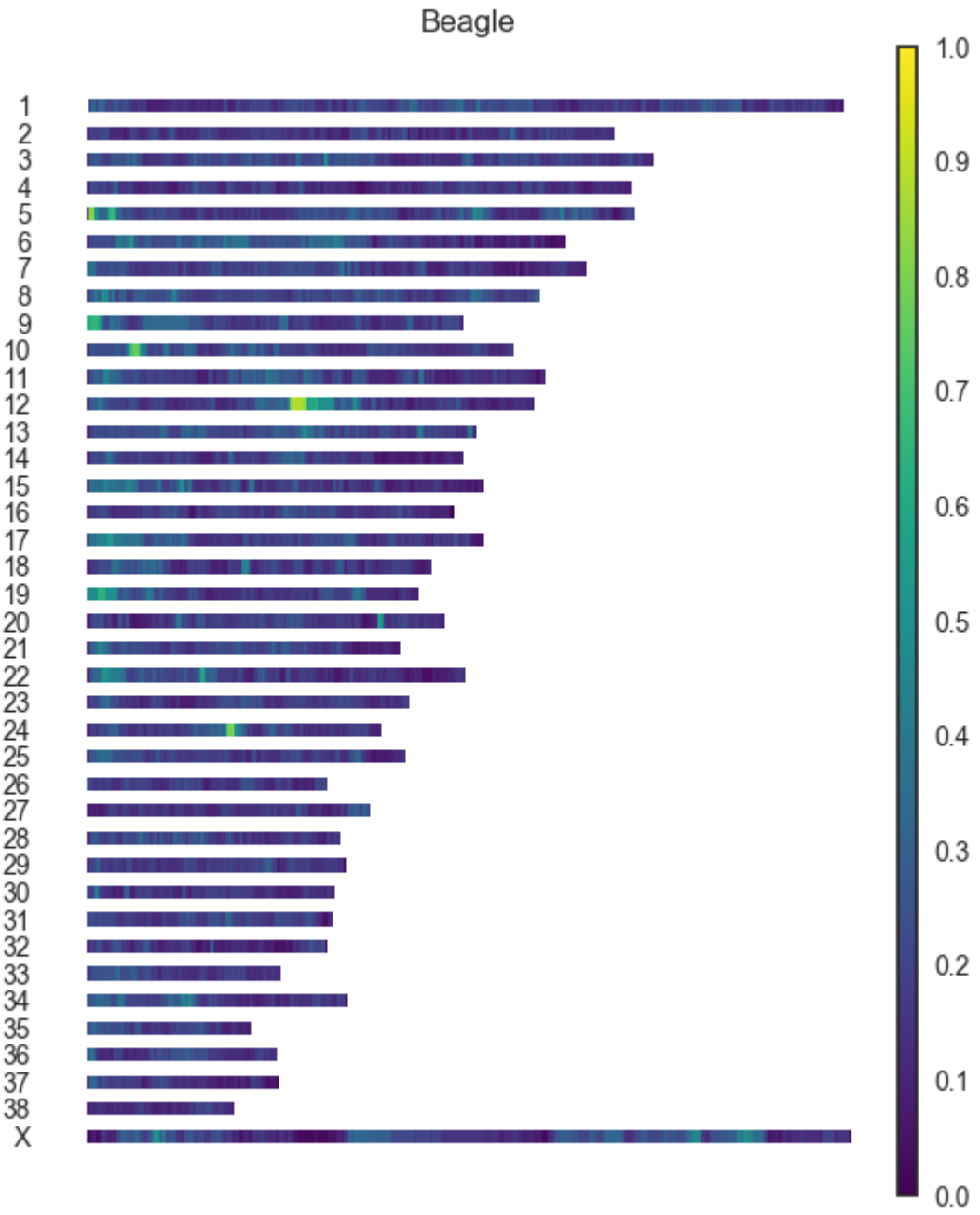

Figure S1. Density of ROH in Beagle

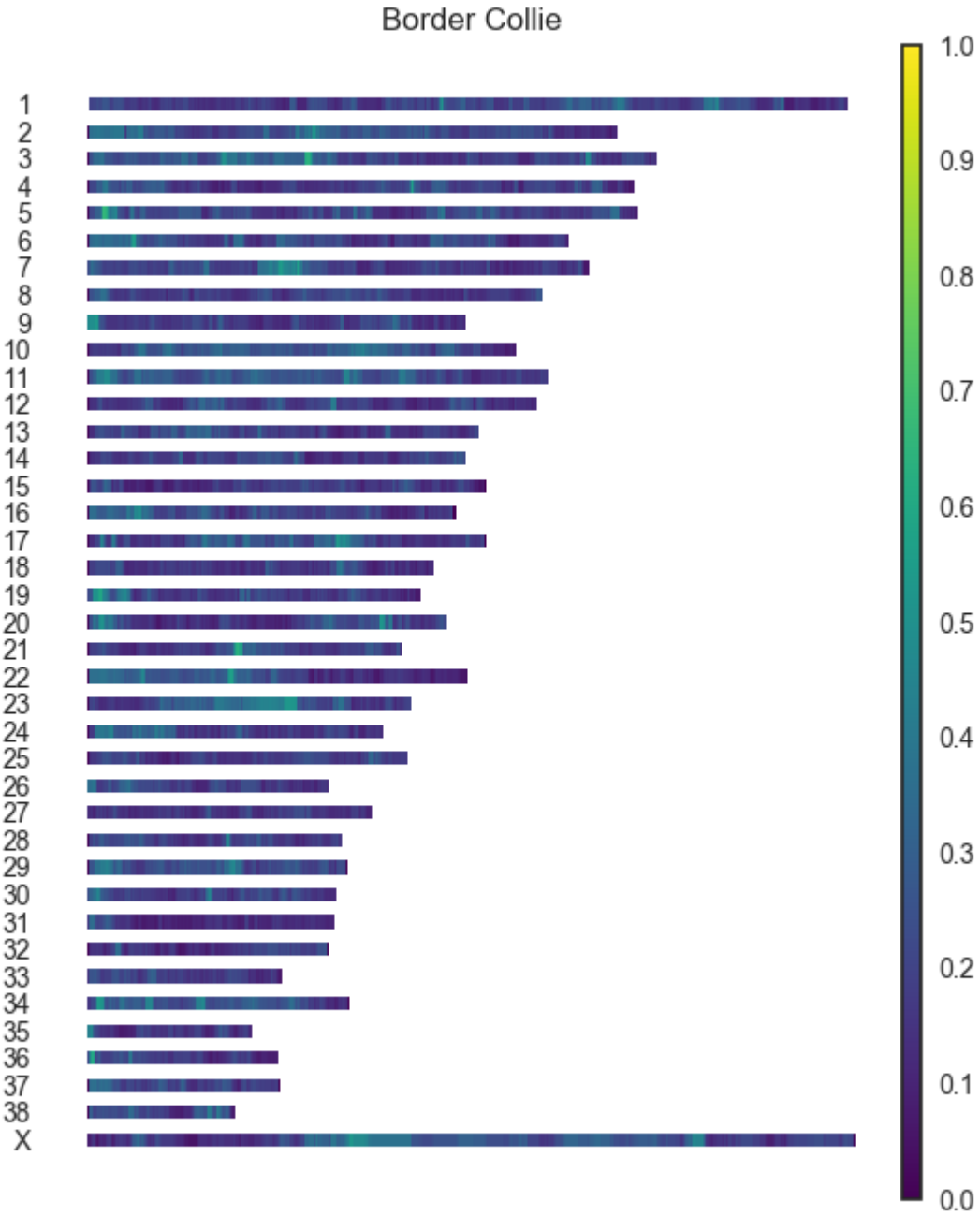

Figure S2. Density of ROH in Border Collie

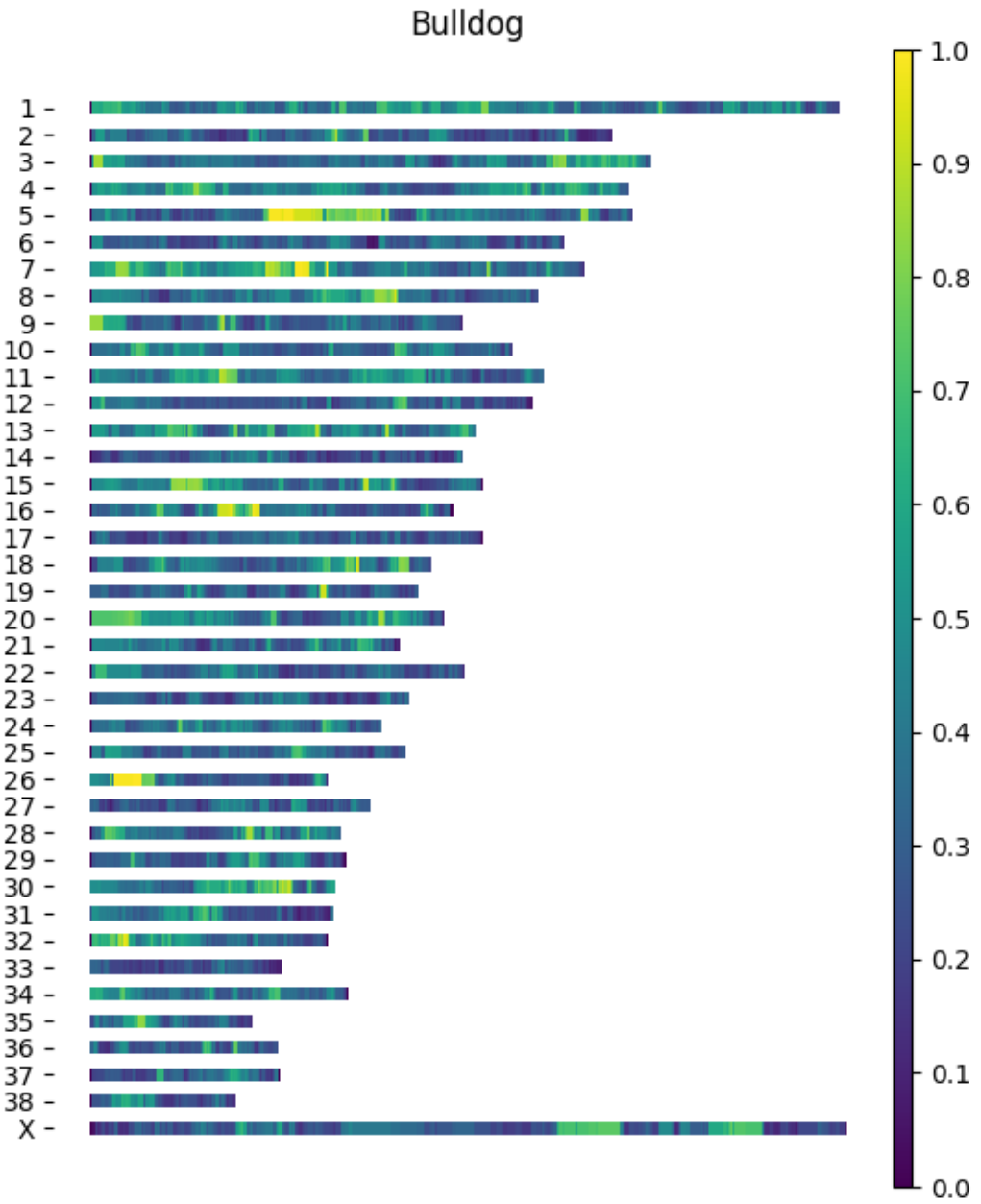

Figure S3. Density of ROH in Bulldog

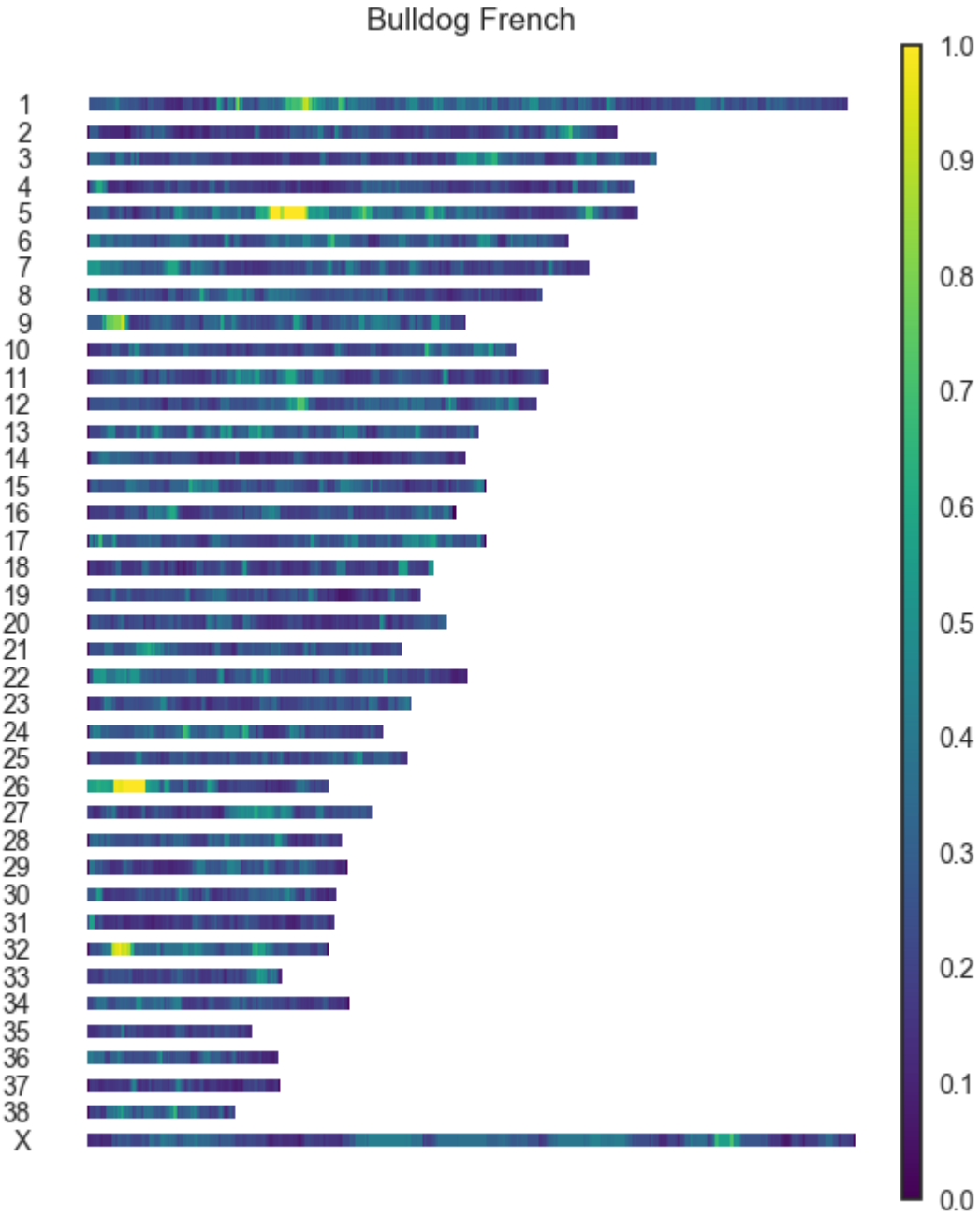

Figure S4. Density of ROH in Bulldog (French)

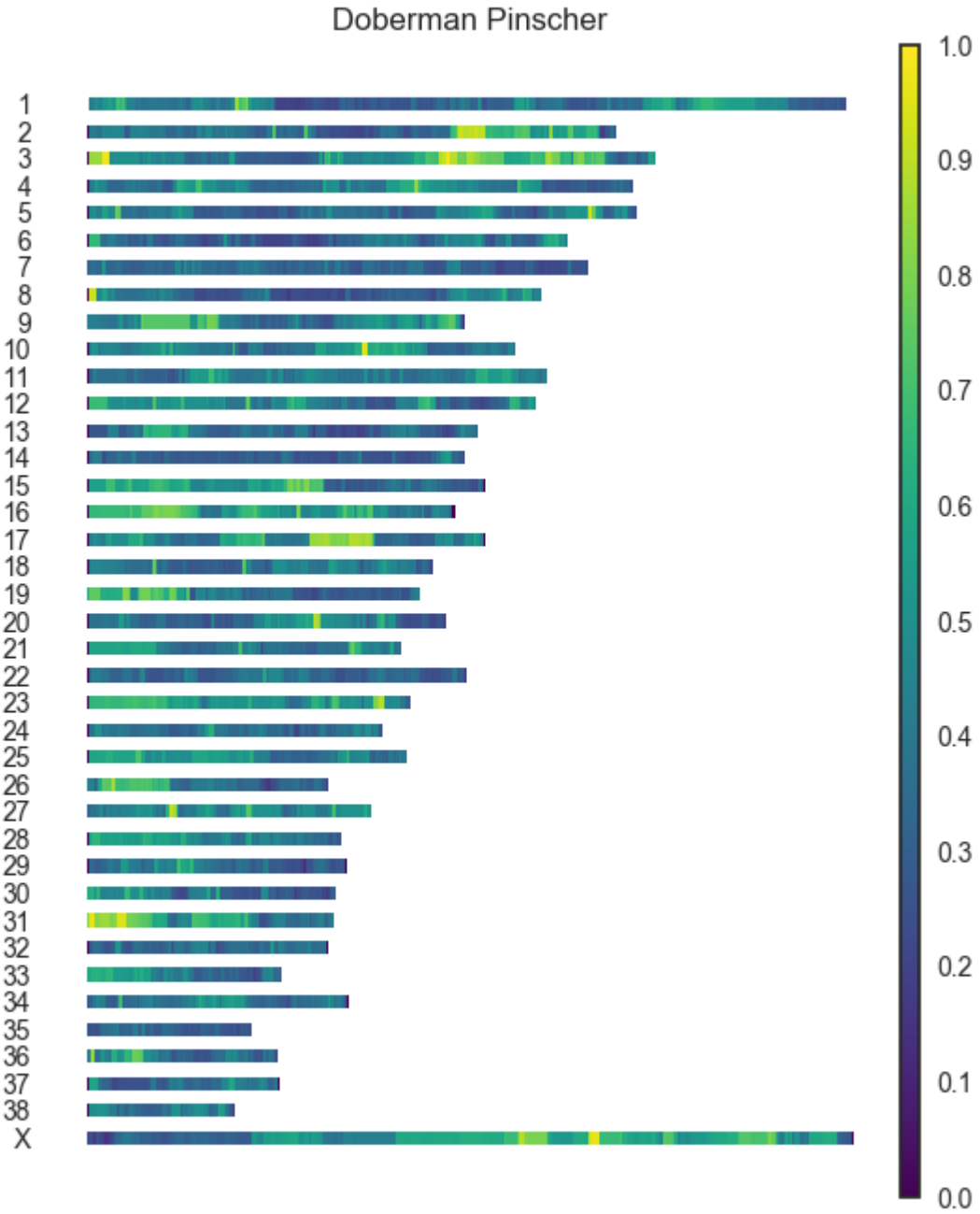

Figure S5. Density of ROH in Doberman Pinscher

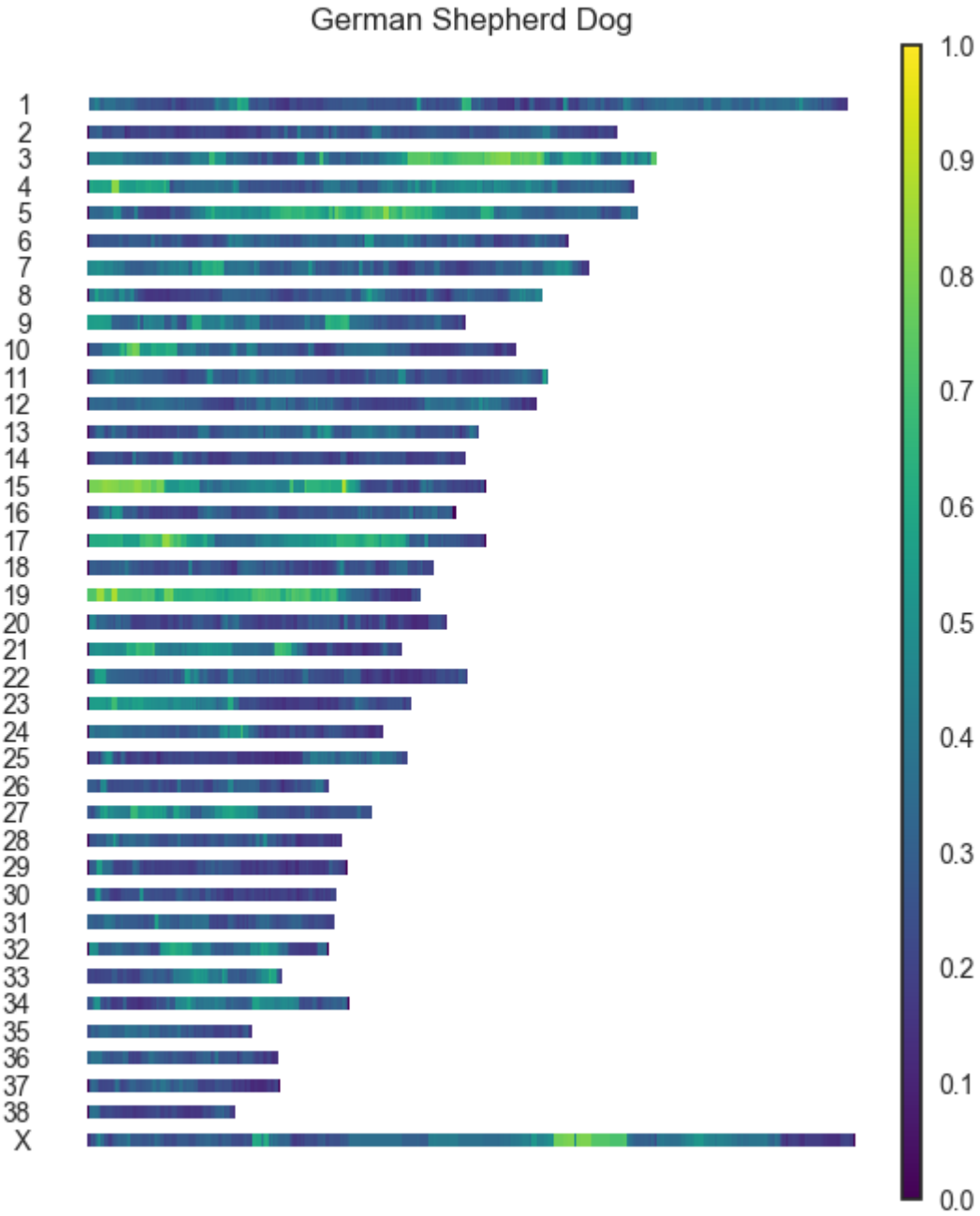

Figure S6. Density of ROH in German Shepherd Dog

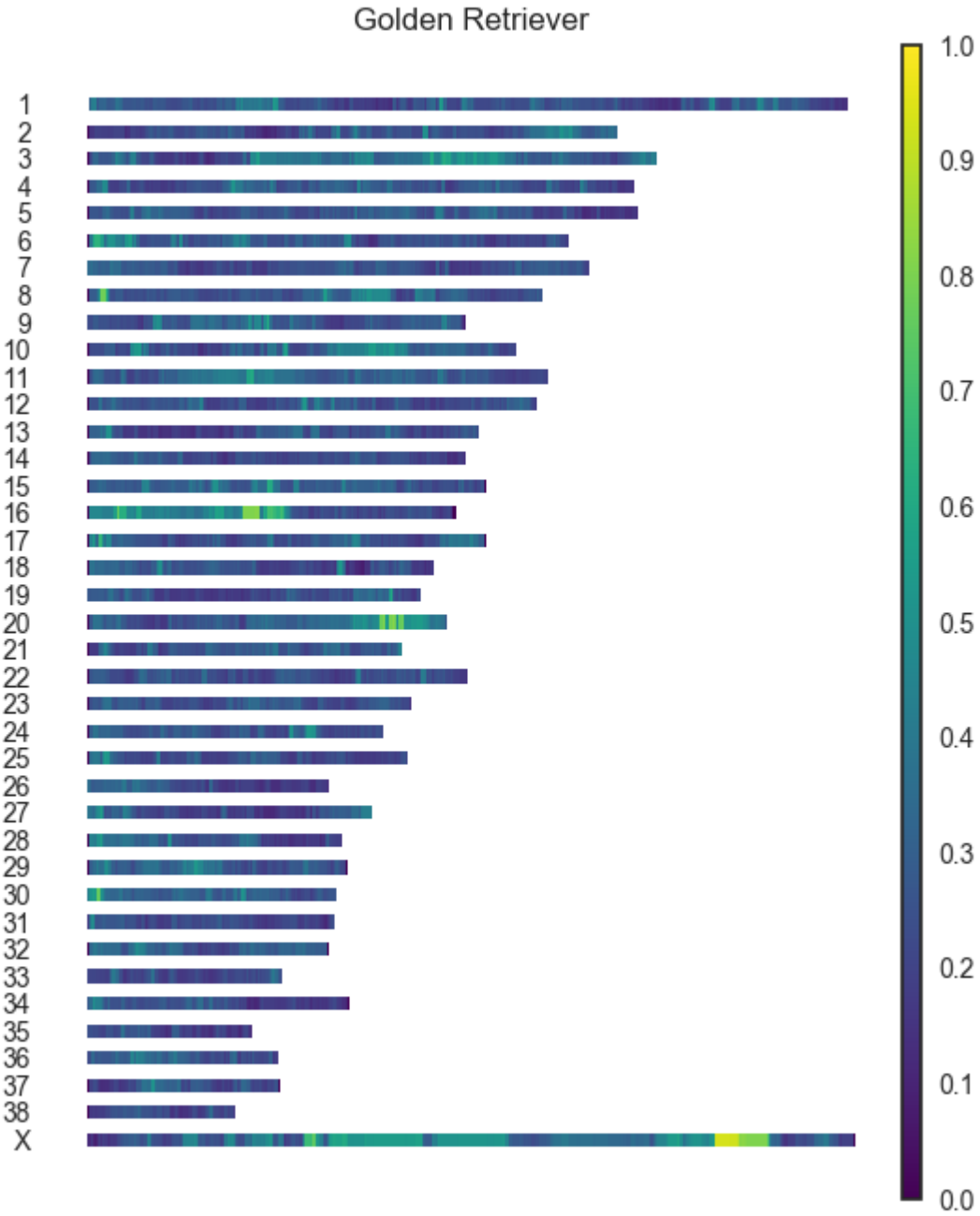

Figure S7. Density of ROH in Golden Retriever

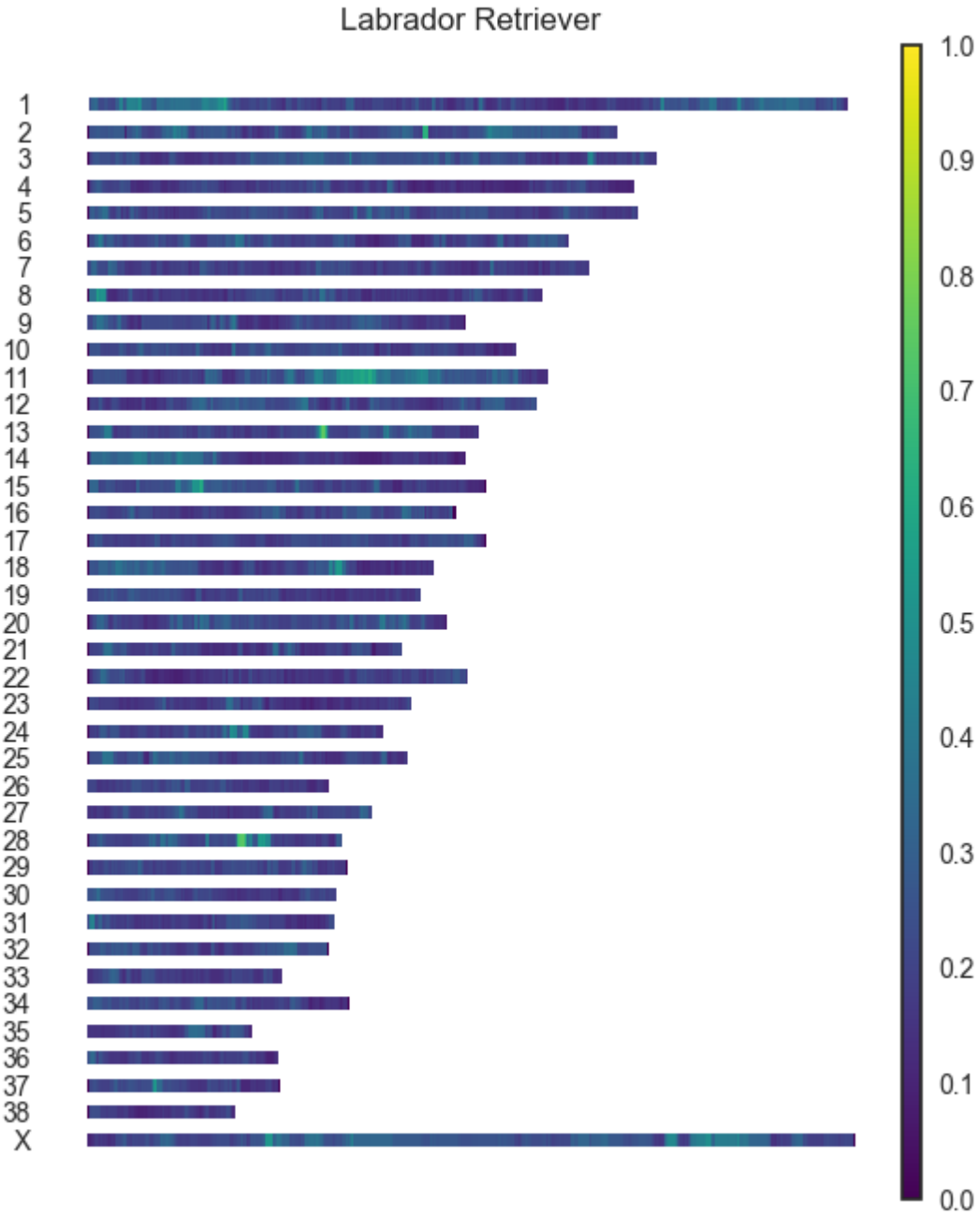

Figure S8. Density of ROH in Labrador Retriever

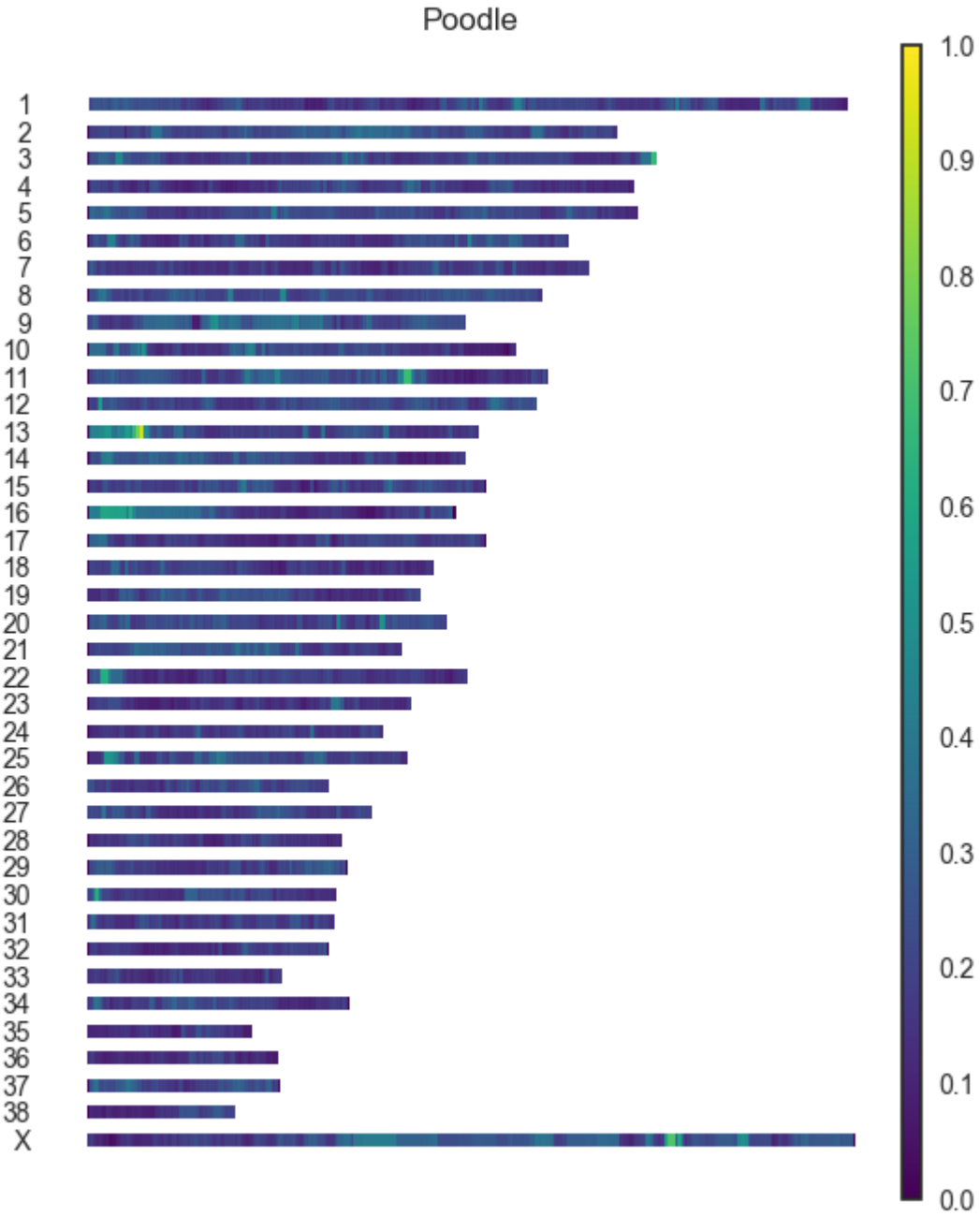

Figure S9. Density of ROH in Poodle (Standard)

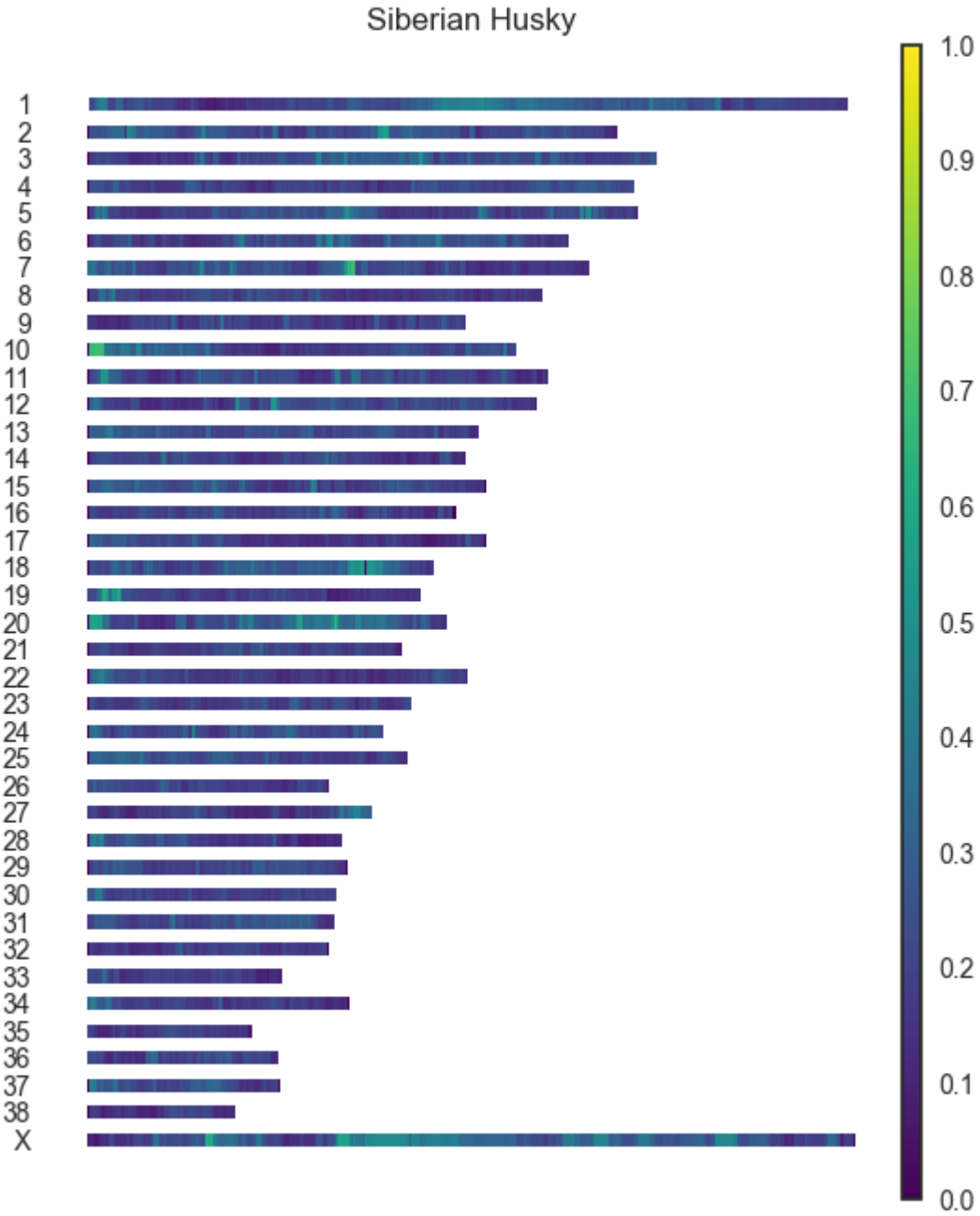

Figure S10. Density of ROH in Siberian Husky

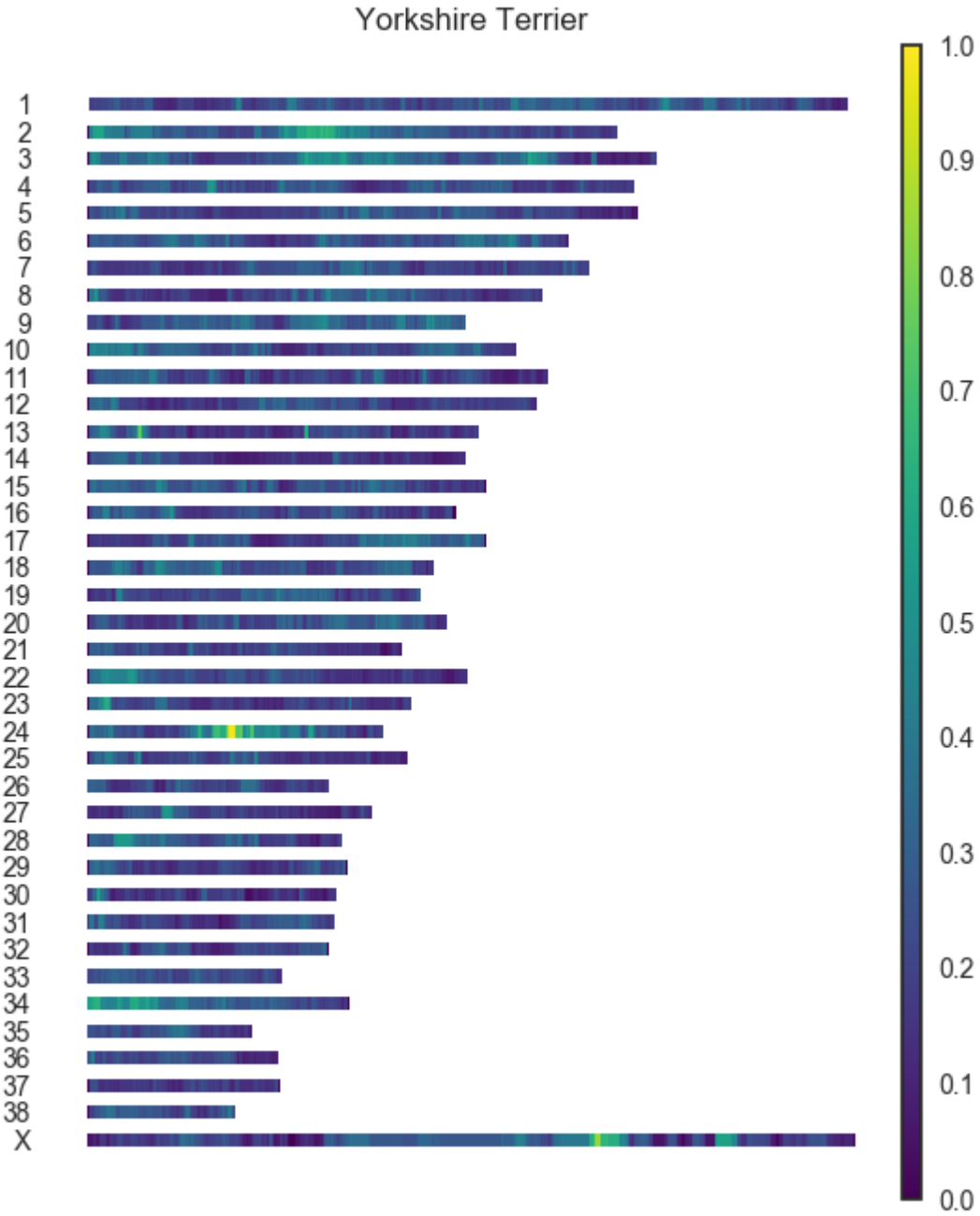

Figure S11. Density of ROH in Yorkshire Terrier

Disorder	Gene	OMIA Number	Reference
Autosomal Recessive Amelogenesis	*ENAM*	OMIA 001805-9615	(Gandolfi et al. 2013)
Canine Multifocal Retinopathy	*BEST1* (aka *VMD2*); exon 10	OMIA 001554-9615	(Zangerl et al. 2010)
Canine Multifocal Retinopathy	*BEST1* (aka *VMD2*); exon 2	OMIA 001444-9615	(Guziewicz et al. 2007)
Centronuclear Myopathy	*PTPLA*	OMIA 001374-9615	(Pelé et al. 2005)
Collie Eye Anomaly, Choroidal Hypoplasia	*NHEJ1* (intron 4)	OMIA 000218-9615	(Parker et al. 2007)
Craniomandibular Osteopathy	*SLC7A2* (exon 15)	OMIA 000236-9615	(Hytönen et al. 2016)
Degenerative Myelopathy	*SOD1*	OMIA 000263-9615	(Awano et al. 2009)
Exercise-Induced Collapse	*DNM1*	OMIA 001466-9615	(Patterson et al. 2008)
Factor VII Deficiency	*F7*	OMIA 000361-9615	(Callan et al. 2006)
Glaucoma	*ADAMTS10*	OMIA 001870-9615	(Ahonen et al. 2014)
Glaucoma	*ADAMTS17*	OMIA 001976-9615	(Oliver et al. 2015)
Hereditary Cataracts, Early-Onset Cataracts, Juvenile Cataracts	*HSF4*	OMIA 001758-9615	(Mellersh et al. 2006)
Hyperuricosuria and Hyperuricemia or Urolithiasis	*SLC2A9*	OMIA 001033-9615	(Bannasch et al. 2008)
Hypocatalasia, Acatalasemia	*CAT*	OMIA 001138-9615	(Nakamura et al. 2000)
Ichthyosis	*PNPLA1*	OMIA 001588-9615	(Grall et al. 2012)
Imerslund-Gräsbeck Syndrome, Selective Cobalamin Malabsorption	*CUBN*	OMIA 001786-9615	(Owczarek-Lipska et al. 2013)
Juvenile-Onset Polyneuropathy, Leonberger Polyneuropathy 1	*ARHGEF10*	OMIA 001917-9615	(Ekenstedt et al. 2014)
Neuronal Ceroid Lipofuscinosis 1	*ARSG*	OMIA 001503-9615	(Abitbol et al. 2010)

Osteochondrodysplasia, Skeletal Dwarfism	*SLC13A1*	OMIA 001315-9615	(Neff et al. 2012)
Persistent Mullerian Duct Syndrome	*AMHR2*	OMIA 000791-9615	(Wu et al. 2009)
Prekallikrein Deficiency	*KLKB1*	OMIA 000819-9615	(Okawa et al. 2011)
Progressive Retinal Atrophy (PRA)	*PDE6B*	OMIA 001674-9615	(Goldstein et al. 2013)
Progressive Retinal Atrophy (PRA)	*PRCD*	OMIA 001298-9615	(Zangerl et al. 2006)
Progressive Retinal Atrophy (PRA)	*RPGRIP1*	OMIA 001432-9615	(Mellersh et al. 2006)
Progressive Retinal Atrophy (PRA)	*TTC8*	OMIA 001984-9615	(Downs et al. 2014)
Spinocerebellar Ataxia with Myokymia and/or Seizures	*KCNJ10*	OMIA 002089-9615	(Gilliam et al. 2014)
Von Willebrand Disease Type I	*VWF*	OMIA 001057-9615	(Brooks et al. 2001)
Von Willebrand Disease Type II	*VWF*	OMIA 001339-9615	(Kramer et al. 2004)

Table S1. Deleterious recessive Mendelian conditions identified in dogs in this study

Breed	*SOD1*	Other
American Bully	0	3
American Eskimo Dog	1	0
American Foxhound	0	2
American Pit Bull Terrier	0	7
American Staffordshire Terrier	0	3
Australian Cattle Dog	1	5
Australian Shepherd	2	1
Barbet	0	1
Basset Hound	0	1
Beagle	0	8
Bernese Mountain Dog	1	0
Border Collie	0	7
Boxer	13	0
Boykin Spaniel	0	1
Bulldog (English)	3	10
Bulldog (French)	16	3
Cavalier King Charles Spaniel	16	0
Chesapeake Bay Retriever	1	1
Chihuahua	0	1
Cocker Spaniel	0	1

Collie	0	6
Dalmatian	0	6
Doberman Pinscher	0	44
English Setter	0	3
English Springer Spaniel	0	2
German Shepherd Dog	24	0
Golden Retriever	0	18
Great Pyrenees	0	1
Irish Wolfhound	0	1
Jack Russell Terrier	0	1
Koolie	1	4
Labrador Retriever	0	13
Longhaired Whippet	0	2
Miniature American Shepherd	0	2
Miniature Pinscher	1	0
Miniature Schnauzer	0	2
Mixed Breed	159	201
Olde English Bulldogge	0	1
Pembroke Welsh Corgi	19	1
Pomeranian	2	0

Poodle	0	4
Pug	2	0
Saint Bernard	0	1
Schipperke	0	3
Scottish Deerhound	0	1
Shih Tzu	4	0
Silky Terrier	1	0
Soft Coated Wheaten Terrier	1	0
Stabyhoun	4	13
Village Dog	4	3
Weimaraner	0	1
Welsh Sheepdog	0	1
West Highland White Terrier	0	2
Wire Fox Terrier	1	0
Xoloitzcuintli	1	0
Yorkshire Terrier	5	3

Table S2. Breed breakdown for dogs in deleterious mutation analysis.

Breed	Count
Beagle	79
Border Collie	102
Bulldog (English)	90
Bulldog (French)	129
Doberman Pinscher	260
German Shepherd Dog	287
Golden Retriever	198
Labrador Retriever	310
Poodle (Standard)	132
Siberian Husky	133
Yorkshire Terrier	72

Table S3. Number of breed dogs included in breed analysis in this study

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