

UNIVERSIDADE ESTADUAL PAULISTA – UNESP

CÂMPUS DE JABOTICABAL

SELECTION SIGNATURES IN SHEEP

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Animal Scientist

2024

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Dissertation presented to the Faculdade de Ciências Agrárias e Veterinárias – Unesp, Campus of Jaboticabal, to obtain the title of Master in the Postgraduate Program in Animal Science.

R696s Rodrigues, Julia Lisboa
 Selection signatures in sheep / Julia Lisboa
Rodrigues. -- Jaboticabal, 2024
 202 f. : il., tabs.

 Dissertação (mestrado) - Universidade Estadual
Paulista (UNESP), Faculdade de Ciências Agrárias e
Veterinárias, Jaboticabal
 Orientador: Danisio Prado Munari
 Coorientador: Marcos Eli Buzanskas

 1. Genetics. 2. Genomics. 3. Sheep. I. Título.

Sistema de geração automática de fichas catalográficas da Unesp.
Biblioteca da Universidade Estadual Paulista (UNESP), Faculdade de
Ciências Agrárias e Veterinárias, Jaboticabal. Dados fornecidos pelo
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CERTIFICADO DE APROVAÇÃO

TÍTULO DA DISSERTAÇÃO: SELECTION SIGNATURES IN SHEEP

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Aprovada como parte das exigências para obtenção do Título de Mestra em Ciência Animal, área: Genética e Melhoramento Animal pela Comissão Examinadora:



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Julia Lisboa Rodrigues – born on January 08, 1998, in São Carlos - São Paulo, Brazil, daughter of Vilson André Rodrigues and Carmem Eunice Lisboa da Conceição. Started her bachelor's degree in Animal Science at São Paulo State University, Campus of Jaboticabal, in 2017. During her undergraduate studies, Julia was granted two scientific initiation scholarships from The São Paulo Research Foundation (FAPESP - process number 2018/04727-6 and 2019/27508-0) and one Research Internships Abroad (BEPE - process number 2018/20723-0) scholarship from FAPESP to intern at Massey University, New Zealand. In December 2021, she became a Bachelor of Animal Science and, in January 2022, started a Master's degree in Animal Science, focusing on Genetics and Animal Breeding at São Paulo State University, Jaboticabal, under the supervision of Prof. Dr. Danísio Prado Munari and Prof. Dr. Marcos Eli Buzanskas. During her master's degree, Julia was granted scholarships in Brazil from the National Council for Scientific and Technological Development (CNPq - process number 130045/2022-5) and FAPESP (process number 2022/13986-0) and one of Canada's government scholarship, Emerging Leaders in the Americas Program (ELAP), to intern at the University of Guelph, Canada.

ACKNOWLEDGMENTS

I would like to thank God for those who have crossed my life. I truly believe that things happen for a reason, and I'm glad for every opportunity He has given me.

A big thank you to my family, especially my parents, Vilson Rodrigues and Carmem Lisboa, and my grandparents, Antônio Rodrigues and Luzia Rodrigues, for always being there for me, believing in my dreams, and helping me make them come true.

I thank my advisor, Prof. Dr. Danísio Munari for welcoming me to his team, for his guidance, advice, and time. As well as for aiding me in the development of numerous skills, for his encouragement of my study abroad, and for being a great example of a professional, a professor and a person.

I also extend my gratitude to my co-advisor, Prof. Dr. Marcos Buzanskas, for his guidance, advice, time, and support throughout my Master's journey.

I thank both Dr. Donagh Berry and the Teagasc, Animal & Grassland Research center for providing the data for my Master's thesis.

I am grateful to Prof. Dr. Flávio Schenkel for welcoming me to the University of Guelph, Canada, and for his receptibility, guidance, and time.

I would like to thank all the friends I made during my Master's, especially those who welcomed me at EAGMA and were with me daily: Rafael Nakamura, Ana Carolina Paz, Larissa Graciano, and Ana Carolina Jesus. I'm also grateful for the new friends I welcomed: Edimar Gabiati and Larissa Bordin (extraofficial).

I thank the friends I have met in Canada for making me feel so welcome, for sharing the ups and downs of living in a new country, and for sharing the feeling of missing home. The mix of culture, coffee, laughs, and complaining about both the presence and absence of snow, made everything better.

I thank the São Paulo State Research Foundation (FAPESP—process number 2022/13986-0) and the National Council for Scientific and Technological Development (CNPq—process number 130045/2022-5) for the scholarships to conduct my research in Brazil and the Canadian government for the Emerging Leaders in the Americas Program (ELAP) scholarship to conduct part of my research in Canada.

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ASSINATURAS DE SELEÇÃO EM OVINOS

RESUMO – A pressão da seleção natural favorece animais mais adaptados a determinados ambientes. A seleção artificial visa atender necessidade econômicas de produção animal. Ambas afetam a diversidade genética e podem causar modificações genômicas nos animais. Os padrões identificados no genoma são denominados assinaturas de seleção. O objetivo do presente estudo foi mensurar a diversidade genética e detectar e caracterizar assinaturas de seleção em 9.498 animais de cinco raças comerciais ovinas (Belclare, Charollais, Suffolk, Texel e Vendéen), criadas na Irlanda. Análise de componentes principais (PCA) e de decaimento do desequilíbrio de ligação foram utilizadas para verificar a estrutura da população. A diversidade genética foi acessada por meio de seis métricas, incluindo diversidade de nucleotídeos, coeficiente de endogamia, heterozigosidade observada e esperada, frequência do alelo menor e distância genética média e dois métodos diferentes foram utilizados na detecção das assinaturas de seleção: escore de Haplótipo Integrado (iHS) e Tajimas'D em janelas não sobrepostas de 100 kb. A heterozigosidade média observada e esperada para todas as raças ovinas foi de 0,353 e 0,355, respectivamente. A raça Suffolk apresentou a menor variação genética e, juntamente com a Texel, teve um decaimento do desequilíbrio de ligação mais lento. Assinaturas de seleção foram identificadas em todas as raças, com algumas regiões se sobrepondo, formando assim segmentos mais longos de assinaturas de seleção. Belclare e Texel apresentaram várias regiões comuns sob seleção positiva. Vários genes foram detectados dentro das regiões de assinaturas de seleção, incluindo *ITGA4*, *TLR3* e *TGFB2* relacionados ao sistema imunológico contra endoparasitas, *DLG1*, *ROBO2*, *MXI1*, *MTMR2*, *CEP57* e *FAM78B* relacionados a características reprodutivas; *WDR70* relacionado a características de produção de leite; *SCHM1* e *MYH15* relacionados a características de produção de carne; e *TAS2R4*, *TAS2R39* e *TAS2R40* relacionados a características adaptativas. Em conclusão, nossos resultados demonstraram uma diversidade genética moderada entre as raças ovinas comerciais e as assinaturas de seleção foram caracterizadas por genes associados a características reprodutivas, produção de leite, produção de carne e características adaptativas, como resistência a endoparasitas.

Palavras-chave: Desequilíbrio de ligação, Espectro de frequência de sítios, Genômica, *Ovis aries*, Polimorfismo de nucleotídeo único, Varredura seletiva

SELECTION SIGNATURES IN SHEEP

ABSTRACT – Natural selection pressure favors animals that are better adapted to certain environments. Artificial selection aims to meet the economic needs of animal production. Both affect genetic diversity and can cause genomic modifications in animals. The patterns identified in the genome are called selection signatures. The present study aimed to measure genetic diversity and detect and characterize selection signatures in 9,498 animals of five commercial sheep breeds (Belclare, Charollais, Suffolk, Texel, and Vendéen) raised in Ireland. Principal component analysis (PCA) and decay of linkage disequilibrium were used to verify the population structure. Genetic diversity was assessed through six metrics, including nucleotide diversity, inbreeding coefficient, observed and expected heterozygosity, minor allele frequency, and average genetic distance. Two methods were used to detect selection signatures: Integrated Haplotype Score (iHS) and Tajimas'D in non-overlapping 100 kb windows. The mean observed and expected heterozygosity for all sheep breeds was 0.353 and 0.355, respectively. The Suffolk breed showed the lowest genetic variation and, together with Texel, had a slower decay of linkage disequilibrium. Selection signatures were identified in all breeds, with some regions overlapping, thus forming longer segments of selection signatures. Belclare and Texel presented several common regions under positive selection. Several genes were detected within the selection signature regions, including *ITGA4*, *TLR3* and *TGFB2* related to the immune system against endoparasites, *DLG1*, *ROBO2*, *MXI1*, *MTMR2*, *CEP57*, and *FAM78B* related to reproductive traits; *WDR70* related to milk production traits; *SCHM1* and *MYH15* related to meat production traits; and *TAS2R4*, *TAS2R39*, and *TAS2R40* related to adaptive traits. In conclusion, our results demonstrated moderate genetic diversity among commercial sheep breeds, and selection signatures were characterized by genes associated with reproductive traits, milk production, meat production, and adaptive traits such as resistance to endoparasites.

Keywords: Linkage disequilibrium, Site frequency spectrum, Genomics, *Ovis aries*, Single nucleotide polymorphism, Selective sweep

CHAPTER 1 – OVERALL CONSIDERATIONS

1. INTRODUCTION

The domestic sheep (*Ovis aries*) is a descendent of Asian mouflon (*Ovis orientalis*), one of the seven extant wild sheep relatives (*Ovis ammon*, *Ovis orientalis*, *Ovis musimon*, *Ovis vignei*, *Ovis canadensis*, *Ovis dalli*, and *Ovis nivicola*) (Zeder, 2012; Cao et al., 2020). The domestication occurred ~11,000 years ago in the Fertile Crescent region between the Middle East and northeastern Africa (Zeder, 2012). These animals acquired a worldwide distribution due to their capacity to endure diverse climates (e.g., cold and hot weather), geographic (e.g., flat and mountain land) (Wei et al., 2015), production systems, and socio-economic contexts (OECD and FAO, 2021).

Sheep can be economically raised by sheep farmers to produce meat, milk, wool, and pelt, with the main uses of sheep products varying by country (Morris, 2017). The main source of income for farmers until the end of the XIX century was wool (Thorne et al., 2021), and the economic exploitation of this trait considered the fiber diameter, fiber length, strength, uniformity, and color metrics to be the most economically valuable (Fang et al., 2014). However, with the increase of synthetic fibers in the XX century, natural fibers were devalued, and sheep farmers turned their attention to meat production (USDA, 2020).

The largest producers of sheep meat are China, India, Pakistan, Australia, United Kingdom, and New Zealand, while countries of the Asian, African, and European continents are the major consumers (OECD&FAO, 2023). The worldwide sheep meat consumption is projected to grow by 15%, reaching 19 thousand tons of carcass weight equivalent by 2032 (OECD&FAO, 2023). The worldwide sheep meat consumption per capita is 1.4 kg, which is lower than other animal-derived proteins such as beef and poultry (OECD&FAO, 2023). However, it remains an essential source of protein for many consumers who demands sheep meat from early maturing animals with high carcass yield, good body conformation, and marbling. A small number of breeds are responsible for meat production (Woolley et al., 2023), which

were selected over the years by breeding programs to improve efficiency and productivity.

Artificial and natural selection pressure are meant to align animals to meet the environment and the farmer's needs (Wanjala et al., 2023), affecting the genetic diversity and causing genomic modifications in regions that might control body conformation, production, and behaviour (Saravanan et al., 2020; Wanjala et al., 2023). These genomic modifications may occur due to the increased frequency of beneficial alleles related to adaptative or economic traits. The increased frequency of beneficial alleles might also increase the frequency of closely linked alleles, forming haplotypes, which reduces the genetic diversity up and downstream of the beneficial allele (Hermisson and Pennings, 2005). These regions in the animal's genome are called "selection signatures" (Eydivandi et al., 2021).

The detection of selection signatures and genetic diversity within and between sheep populations can be accessed by the use of single nucleotide polymorphisms (SNP) arrays (Wanjala et al., 2023). The development of bioinformatic and statistical analysis methods associated with SNP information allowed the detection of gene networks involved in phenotypic variation. Identifying the selection signatures can allow the comprehension of gene flow in the selection process and genetic evolution within populations, documenting the genetic responses to selective pressures for traits of interest (Saravanan et al., 2020). Besides that, it can be a tool to complement genome-wide association and genomic selection studies (Chen et al., 2016). Selection may reduce genomic diversity, which is a concern for breeding and conservation programs that works avoiding inbreeding and extinction of local sheep breeds.

Therefore, this study aimed to explore the genetic diversity and detect selection signatures within the Belclare, Charollais, Suffolk, Texel, and Vendéen sheep breeds. These commercial sheep breeds are raised in Ireland and included in the Irish breeding program focusing on meat production. Genes and QTL identified under selection were evaluated according to their biological functions by performing an enrichment analysis to provide insight into the genomic mechanisms related to these sheep breeds' economic and adaptative traits.

2. LITERATURE REVIEW

2.1 Sheep breeds

Selection (natural and artificial), migration, geographical isolation, and mutation have led to a substantial variation in the phenotypic traits and the formation of different sheep breeds (Mohamadipoor Saadatabadi et al., 2021). The concept of a 'breed' was introduced by Blackwell in England in the eighteenth century, with the first herd book opened in the mid-nineteenth century for Hereford cattle (Felius et al., 2014). This publication was a crucial point in the history of animal breeding and may have laid the start herd books in other livestock animals, including sheep. The upcoming topics provided detailed information on the five commercial sheep breeds that are the focus of this study.

Belclare

A composite breed that emerged in the 1960s in Ireland from the sheep genetics program established by The Agricultural Institute (An Foras Talúntais), now known as the Agriculture and Food Development Authority (Teagasc), which aimed to develop animals with higher prolificacy (Cunningham, 2022). This breed is widely used for crossing due to their average litter size (e.g., 2.2), which permits the production of 57% more lambs during the ewe life, besides increasing the weaning weight and reducing the slaughter age of the lambs (Keady and Hanrahan, 2021).

The animals are white, polled, resistant to parasites, and docile. Belclare ewes have excellent maternal ability, low lambing difficulty, and can raise three lambs if they receive adequate nutrition during lactation (Miley, 2019). The prolificacy in Belclare ewes was associated with a mutation in the *BMP15* (*FecXB*) gene linked to chromosome X, which is responsible for increasing the ovulation rates in females (Hanrahan et al., 2004; Bibi et al., 2021; Niu et al., 2021). The genetic composition of Belclare sheep in the breed formation was 37.5% Texel, 25% Lleyn, 19.5% Finn, 9.0% Galway, 2.5% Cheviot, 1.5% Suffolk, 1.0% Border Leicester, and 4.0% unknown breeds (Cunningham, 2022).

Charollais

The Charollais breed is from the Saone Loire region of France and was developed in 1825 by the crossing of Leicester Longwool and local breeds (Porter, 2002). However, the herd books named and recognized them in France, the United Kingdom, Switzerland, Canada, China, and other countries only in 1964 (Porter, 2002). The animals are medium-sized, well-muscled, normally white, with a pink or grayish head, and generally without wool. The adult weight of Charollais ewes can vary from 90 to 100 kg, while the adult weight range in rams is 100 to 130 kg (Irish Charollais Sheep Society, 2023).

The animals are used in terminal crossing to produce quality meat lambs for slaughter as they have meat-eating quality, top trials for sheer force and taste, and develop their muscularity quickly after birth (Charollais Sheep Society, 2023). At the same time, they have traits related to maternal ability (Charollais Sheep Society, 2023). These traits justify the wide distribution of the Charollais breed in Europe, Australia, New Zealand, South America, the United States, and Canada (Charollais Sheep Society, 2023).

Suffolk

The Suffolk breed was developed at the beginning of the XIX century in England by the cross of the Southdown and Norfolk Horn breeds and was officially recognized in 1810 and registered in 1859 by the Royal Agricultural Society of England (Porter, 2002; New Zealand Sheepbreeders Association, 2023). Suffolk animals are medium-sized, polled, with white wool and black head and legs (Suffolk Sheep Society, 2023). Adult ewes have an average weight of 80 kg, and the adult rams have an average weight of 95 kg (AHDB Beef&lamb, 2018) and have high adaptability and parasite resistance (Villela and Dias, 2021).

The animals are primarily raised to produce meat due to the precocity of the lambs, high carcass yield (e.g. 50 to 60%), low-fat deposition, and high weight gain (e.g. 450 g) (Piper and Ruvinsky, 1997; Villela and Dias, 2021). The ewes have 1.65 lambs per birth and high maternal ability (Suffolk Sheep Society, 2023). The Suffolk breed is widely used in commercial flocks and is raised in Europe, South America, North America, and Oceania (Suffolk Sheep Society, 2023).

Texel

The Texel breed is from Texel's island in the Netherlands and was developed early in the XIX century by the cross between Leicester Longwool, Lincoln, and local breeds (Porter, 2002). This cross aimed to produce heavily muscled lambs of superior eating quality and with low-fat deposition (Texel Sheep Breeders Society, 2023). The animals are polled, without wool in the head and legs, with wide faces and black noses, and can have white and black wool (Texel Sheep Breeders Society, 2023). The adult ewes have an average weight of 85 kg, and the adult rams have an average weight of 120 kg (AHDB Beef&Lamb, 2018). The ewes are docile, resistant, and with a mean of 1.8 lambs per birth and high maternal ability (AHDB Beef&Lamb, 2018).

This breed is primarily raised for lamb and meat production due to its muscularity, loin-eye area, carcass quality, and low-fat deposition (Texel Sheep Breeders Society, 2023). The rams are mostly used in terminal-crossing. This breed is raised worldwide in Europe, South America, North America, and Oceania (Texel Sheep Breeders Society, 2023; Porter, 2002).

Vendéen

The Vendéen breed was developed early in the XIX century in the Vendéen region in France by the cross between the local sheep breeds and the Southdown breed (Porter, 2002; France Génétique Elevage, 2015), aiming to meet the demand for lean lamb with excellent flavor (The British Vendéen Sheep Society, 2018). The animals are white with dark brown to gray head and legs, and the adult average weight of ewes is 80 kg, and the adult rams 110 kg (Irish Vendéen Sheep Society, 2023). Animals are docile, resistant, adapted to temperature variations and drought periods, and raised in different systems (e.g. extensive, semi-extensive, and intensive) (France Génétique Elevage, 2015).

Vendéen ewes have high maternal ability, precocity, and prolificacy, with an average of two lambs per birth (The British Vendéen Sheep Society, 2018). The animals are raised for meat production due to the high lamb-quality carcass and low-fat deposition, as well as for wool production due to the high quality and uniformity of the wool (Irish Vendéen Sheep Society, 2023). These traits allowed the intense

utilization of this breed, which is used primarily in terminal-cross in France and Ireland (France Génétique Elevage, 2015).

2.2 Principles of genetic diversity and selection signatures

Selection pressure caused by artificial and natural selection can affect sheep's genetic diversity. The genetic diversity can be quantified by many measures to assist in understanding the genetic variability within and between populations and provide insights for designing breeding strategies (Abied et al., 2020). The genetic diversity needs to be estimated over time to monitor changes (Hvilsom et al., 2022), as low genetic diversity means fewer opportunities to respond to selection, which can occur due to the reduction of the population size caused by habitat loss, climate change or isolation (Barbosa et al., 2021), and high degree of selection and breeding (Shi et al., 2023).

The increase of beneficial mutation frequency in a population may also increase the frequency of alleles near them, even though these variants do not directly affect the traits. According to Utsunomiya et al. (2015), this effect results from a high linkage disequilibrium between the alleles in the same chromosome, reducing the chances of recombination and forming haplotypes. Furthermore, reducing the genetic variation, up and downstream of the selected advantageous mutation (Pennings and Hermisson, 2017) form genetic patterns or footprints in the animal's genome carried across the generations called "selection signatures" (Jensen et al., 2016; Saravanan et al., 2020).

The selection signatures can be classified by hard or soft sweeps, complete (e.g. complete fixation of a beneficial allele), or partial (e.g. beneficial allele still segregating along the neutral sites), depending on the origin, type, and frequency of a favorable mutation (Saravanan et al., 2020). For hard selective sweeps, the frequency of a beneficial mutation increases quickly and reaches fixation, reducing the genetic variation up and downstream of the beneficial allele (Ghoreishifar et al., 2021) (Fig. 1A). The soft selective sweep is formed due to the increase of a standing genetic variation previously neutral or deleterious that became beneficial due to environmental or genetic changes and leads to fixation, leaving some genetic variation around the beneficial allele (Hermisson and Pennings, 2017; Saravanan et

al., 2020) (Fig. 1B). Thus, the detection of soft sweeps is more difficult than hard sweeps, being also dependent on the sample size (Saravanan et al., 2020).

The detection of the selection signatures is usually done into separate genome segments of equal length, named windows, which increase the chance of identification of regions under selection (Beissinger et al., 2015). The window size can be determined by the extent of the dataset's linkage disequilibrium (Ma et al., 2015) and to be compared, should have the same size (Qanbari et al., 2011). However, the subjective determination of the window size might influence the results and interpretation of the analysis (Qanbari et al., 2011), e.g., small window sizes may not include sufficient information, and big window sizes may detect an abundance of false positives (Beissinger et al., 2015).

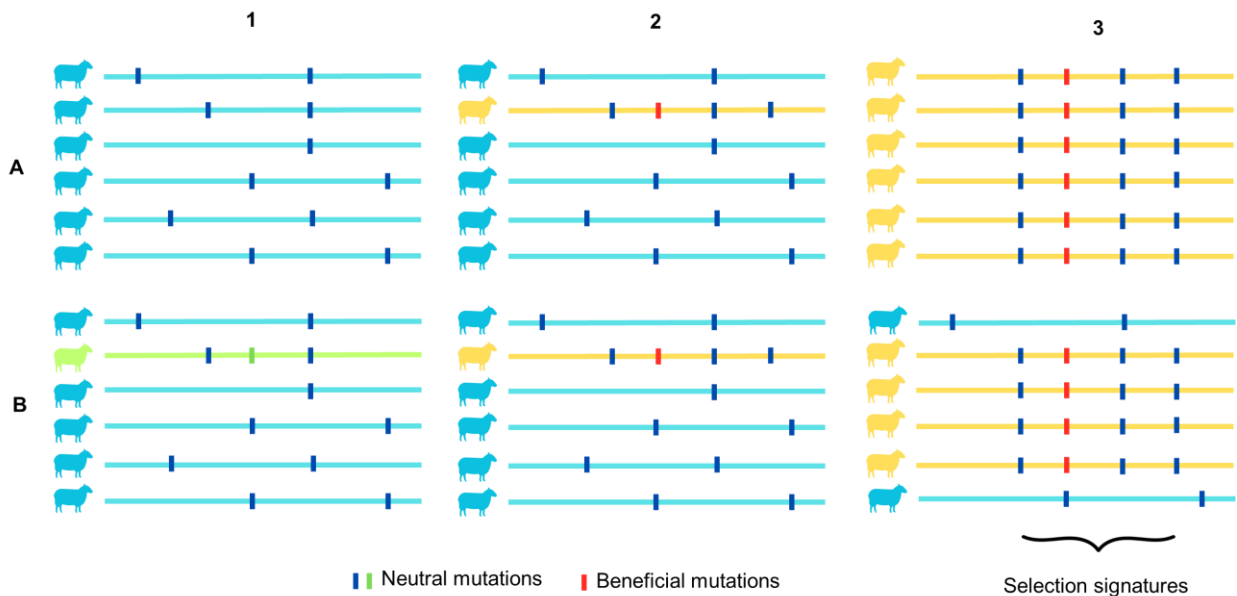


Figure 1. Types of selection signatures. A) Hard sweep: 1) DNA sequence of one population with neutral segregation of the alleles (blue) before selection; **2)** a beneficial mutation occurs in the second sequence (red) with genetic variation around the favorable allele; **3)** during the selection process, the beneficial allele increases in frequency reaching to fixation, this reduces the genetic variation up and downstream of the beneficial allele. **B) Soft sweep: 1)** DNA sequence of one population with neutral mutation (green and blue); **2)** the neutral mutation (green) becomes beneficial (red) due to environmental or genetic changes; **3)** selection leads to fixation of the beneficial allele in the population but leaves some genetic variation around them. Adapted from Saravanan et al. (2020).

The ability to detect selection signatures and genetic diversity in livestock animals has greatly improved due to the development of next-generation sequencing

(NGS) technologies, high-density SNP arrays, and statistical and bioinformatics tools (Saravanan et al., 2020). The probability of identifying selection signatures may be increased by using different statistical methods (Waineina et al., 2022). The genetic diversity and selection signatures analyses can provide a clear insight into genes and regions related to biological functions and pathways associated with economic and adaptative traits in sheep. It gives a better view into the progress of artificial selection, as the identified genes can be used as molecular genetic markers to assist selection, allowing the continuity of the genetic improvement in livestock populations (Saravanan et al., 2020; Li et al., 2022). Besides that, selection signatures can be used as a complementary approach to GWAS, testing the contributions of regions under selection to the phenotype, which can be subsequently used in genomic selection (Chen et al., 2016).

2.3. Genetic diversity and selection signature metrics

The characterization and identification of genetic diversity and regions under selection provide information on genes and genomic regions associated with adaptive and economic traits. A wide range of metrics are used to assess genetic diversity within and between population, e.g., Wright's F-statistics, observed and expected heterozygosity, effective population size, and admixture (Olschewsky and Hinrichs, 2021). For the detection of the selection signature regions the methods are commonly divided into (1) Intra-population statistics, which includes the approaches based on site frequency spectrum (SFS), linkage disequilibrium (LD), and reduced local variability methods; and (2) Inter-populations statistics, which includes the single site and the haplotype-based differentiation (Saravanan et al., 2020). As there are many metrics used for studying genetic diversity within population and selection signatures, we decided to focus on those connected to the upcoming chapter.

Nucleotide diversity (π) – This metric is used to measure the degree of polymorphism of a population at the nucleotide level (Nei and Li, 1979), which is the variation in the sequence of the nitrogenous bases (ATCG). The measure considers the average pairwise difference between all possible pairs of individuals in the

analyzed population (Nei and Tajima, 1981). Low π -value expresses low nucleotide differences among the animals and is defined by (Eq. 1):

$$\pi = \sum_{ij} x_i x_j \pi_{ij} \quad (Eq. 1)$$

where x is the frequency of each allele and π_{ij} is the number of nucleotide differences per nucleotide site between the i th and j th sequences.

Observed and expected heterozygosity (H_O and H_E) – Heterozygosity measures the probability of non-identity and is a measure of genic variation of individuals in a population (Nei, 1973; Nei, 1978). It can be divided into observed heterozygosity (H_O), which is measured as the proportion of heterozygous genotypes that carry two different alleles at a given locus in a population and expected heterozygosity (H_E) that is calculated based on the population's allele frequencies (Nei, 1973; Nei, 1978). High values of observed heterozygosity can be related to high levels of genetic variation.

Wright's inbreeding coefficient (F_{IS}) – Inbreeding in a population indicates the probability of two alleles at a locus being identical. The Wright F-statistics (F_{IS}) is based on comparing the observed and expected heterozygosity (Wright, 1949). It become negative in the population when H_O is greater than H_E , indicating an excess of heterozygotes (Wright, 1949). When H_O is lower than H_E , it suggests a deficit of heterozygosity and an increase in inbreeding.

$$F_{IS} = \frac{H_E - H_O}{H_E} \quad (Eq. 2)$$

Minor allele frequency (MAF) – The MAF is primarily used to evaluate the frequency of the two less common alleles. It also shows the proportion of polymorphic SNPs, which can indicate genetic variation in a population (Brito et al., 2017). The loci with low MAF have limited heterozygosity and indicated less variability in the population (Kanaka et al., 2023).

Average pairwise genetic distance (D) – This metric measures the genetic distance between the individuals within the population and considers the proportion of shared alleles between two individuals (D_{ST}) (Kanaka et al., 2023). The genetic distance between all pairwise combinations of the individuals is calculated by $D = 1 - D_{ST}$. Higher D_{ST} values indicate less variability in the population and consequently fewer D values.

Integrated Haplotype Score (iHS) – The iHS statistic was developed by Voight et al. (2006) as an extension of the extended haplotype homozygosity (EHH) method developed by Sabeti et al. (2002). The iHS is based on linkage disequilibrium and detects selection signatures leading to fixation, which means that the alleles are still segregating and are associated with a recent selection within population (Saravanan et al., 2020). The iHS is defined as Eq.4:

$$|iHS| = \frac{\ln\left(\frac{iHH_1}{iHH_0}\right) - E_p \left[\ln\left(\frac{iHH_1}{iHH_0}\right) \right]}{S_p \left[\ln\left(\frac{iHH_1}{iHH_0}\right) \right]} \quad (Eq. 4)$$

where iHH_0 and iHH_1 corresponded to the integrated EHH score for ancestral and derived core alleles, respectively; E_p and S_p are the expectation and the standard deviation of the $|iHS|$ estimates in frequency bin p .

Tajima's D – This metric is often used to detect hard selection signatures reaching to complete fixation in the population and can identify low-to-medium frequency alleles (Korneliussen et al., 2013). The Tajima's D statistic (Eq. 5) (Tajima, 1989) is based on the Site Frequency Spectrum (SFS) method, which compares the difference between the average number of differences in nucleotides ($\theta\pi$) and the number of segregating sites (θs) estimated from polymorphism data (Carlson et al., 2005). The $\theta\pi$ and θs estimators are symmetric and assign equal weight to alleles of the same frequency. However, after the fixation of an advantageous allele, there is an excess

of advantageous alleles in the population, which causes a negative Tajima's D value (Korneliussen et al., 2013).

$$\text{Tajima's } D = \frac{\theta_{\pi} - \theta_s}{\sqrt{\text{var}(\theta_{\pi} - \theta_s)}} \quad (\text{Eq. 5})$$

2.4 Genetic diversity and selection signatures in sheep

Selection pressure caused by artificial, and natural selection affects the sheep's genome structure. As sheep are spread worldwide, the document of the levels of genetic diversity and the characterization of selection signatures have been previously reported. Kijas et al. (2012) reported the mean of H_E in a variety of global sheep breeds, ranging from 0.22 to 0.38. In the Texel breed, the mean H_E varied from 0.346 (Brito et al., 2017) to 0.6223 (Wang et al., 2023). In Suffolk from Australia and Ireland, the F_{IS} mean was 0.0180 (Wang et al., 2023). In five Chinese local sheep breeds, the F_{IS} ranged from -0.004 to -0.029 and the MAF from 0.266 to 0.270 (Abied et al., 2020). In three Indian sheep breeds, the mean of D varied from 0.301 to 0.313 (Saravanan et al., 2021).

Selection signatures harboring the genes *HOXB13* (OAR11), *LIN28A* (OAR3), *PAX3* (OAR2), and *VEGFA* (OAR20) were related to fat deposition and identified by XP-EHH and F_{ST} methods in fat-tailed sheep (Li et al., 2024). The fat-tail deposition is the ability to store energy and help the animals to survive in extreme conditions, e.g., cold stress during the winter and hot stress in the desert (Zeng et al., 2020). The sheep adaptation to desert environment was also evidenced by the genes involved in thermo-tolerance, such as *FGF2* (OAR17), *GNAI3* (OAR13), and *PLCB1* (OAR13) (Kim et al., 2016). Genes related to TAS2G family genes were identified in the selection signatures in sheep and related to the perception of a bitter taste to avoid toxic plants (Henslee et al., 2020).

Through selection signatures analysis utilizing the F_{ST} method, the gene *SMAD2* (Wang et al., 2023), *PAK1*, *ADCY1*, and *GNAQ* (Zhang et al., 2022) were related to litter size in sheep. The genes *OXT* by Tajima's D and *BMPR1B* and *FSHR* by the iHS method were identified and related to reproductive performance in sheep (Guo et al., 2022). The reproduction traits, such as fertility, prolificacy, and fecundity,

impact a sheep farm's profitability (Abdoli et al., 2016). The gastrointestinal nematodes also impact the profits as they decrease the sheep's health and increase the utilization of anthelmintic in the animals. The genes *C3AR1*, *CSF3*, *SOCS2*, *NOS2*, *STAT5B*, *TGFB2* and *IL2RA* were identified as under selection in resistant sheep to *H. contortus* in selection signatures identified by the F_{ST} method and associated with immune response (Estrada-Reyes et al., 2019).

Fariello et al. (2013) and Li et al. (2024) detected the gene *MSTN* under selection on chromosome 2 in sheep breeds, contributing to muscular hypertrophy. The genes *SMO*, *PPARGC1A*, *NCAPG*, *LCORL*, and *GHR* harbored selection signatures and were associated with growth and meat quality (Liu et al., 2022). These selection signatures were identified using iHS, F_{ST} , and XP-EHH methods. The genes *PDE3A* (OAR3), *LGALS12* (OAR21), *GGPS1* (OAR25) and *SAR1B* (OAR3) were related to muscle development and fat metabolism and detected by F_{ST} and XP-EHH analysis (Li et al., 2024). Sun et al. (2024) identified selection signatures using XP-EHH and F_{ST} methods harboring the genes *IRF2BP2* (OAR25), *BVES* (OAR8), and *ALOX5* (OAR25), which were related to fiber and wool development. Selection signatures harbored genes related to wool color (*ASIP*) and hair development (*KRT71*, *KRT74*, *IRF2BP2*) in sheep breeds raised in China (Li et al., 2024). Wool color and hair development play an important role in heat stress as they determine how the animal will reflect and absorb the heat (Berihulay et al., 2019).

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CHAPTER 2 – GENETIC DIVERSITY AND SELECTION SIGNATURES IN SHEEP BREEDS

1. INTRODUCTION

Evolutionary, geographic, and selection processes (natural and artificial) cause specific changes in genomic regions that can be associated to particular traits, such as body conformation and disease resistance (Saravanan et al., 2021). Selection occurs in different forms: positive selection, negative selection, and balancing selection (Nielsen et al., 2005). Positive selection occurs when a particular allele or mutation confers advantages for a specific trait or the individual's survival. The frequency of the beneficial allele increases more rapidly than expected compared to a neutral allele thereby contributing to a reduction in genetic diversity and extending the linkage disequilibrium (LD) (Saravanan et al., 2020). Positive selection may also alter the allele frequencies of genetic variants near the location of the beneficial mutation, forming haplotype blocks (Álvarez et al., 2020). Such changes in allele frequency due to positive selection creates footprints on the genome known as selection signatures.

Selection signatures can be classified as either a soft sweep when multiple haplotypes flanking the adaptive allele increase to high frequency in the population or a hard sweep when only a single haplotype with the adaptive mutation increases to a high frequency (Garud, 2023). Different methods for detecting selection signatures have been developed as different types of selection signatures shape the genome. The high-throughput sequencing and single nucleotide polymorphism (SNP) genotyping technologies, advanced bioinformatics tools, and robust statistical tests have all created new opportunities to explore and understand genomic selection patterns (Saravanan et al., 2020).

The methods to identify selection signatures within populations can be divided into three categories: 1) Site Frequency Spectrum based on the distribution of allele frequencies using statistics like the Tajima's D (Tajima, 1989) and Fay and Wu's H-statistic (Fay & Wu, 2000); 2) LD methods using approaches like Extended Haplotype Homozygosity (EHH) (Sabeti et al., 2002) and Integrated Haplotype Score (iHS) (Sabeti et al., 2006), and; 3) methods based on reduced local variability, such as runs of homozygosity (ROH). Using more than one method can improve the likelihood of

detecting selection signatures (Qanbari and Simianer, 2014) and provide confidence in any detected signatures. Nonetheless, employing different methods leads to distinct discoveries that can complement each other as different strategies are based on different statistical assumptions.

The identification of selection signatures in sheep breeds is likely due to their high adaptability to different climates, geographic conditions, and diets with poor nutritional quality (Fariello et al., 2014; Wei et al., 2015). Sheep (*Ovis aries*) is a descendant of the Asian mouflon (*Ovis orientalis*), domesticated about 11,000 years ago in southwest Asia and has reached worldwide distribution (Zeder, 2012; Cao et al., 2021). The early selection objectives included behaviour towards the presence of humans, not rejecting handling or herding, body size, coat pigmentation, and adaptability (Mirkena et al., 2015). Subsequently, animals started to be selected for specialized production, primarily raised for meat and later for wool, milk, and pelts (Gootwine, 2020; Wei et al., 2015) resulting in diverse livestock breeds.

Therefore, this study aimed to explore the genetic diversity and detect and characterize selection signatures in five commercial sheep breeds (Belclare, Charollais, Suffolk, Texel, and Vendéen). The commercial breeds were included in the Irish sheep breeding program, and all animals were raised in Ireland. The iHS and Tajima's D methods were used to detect selection signatures leading to and reaching fixation, respectively. In addition, enrichment analysis for the genes identified as being under selection was carried out to provide a clear insight into the genomic mechanisms related to the economic and adaptive traits in these sheep breeds.

2. METHODS

Genotypic data

The genotyping data used in the present study were from the Irish national sheep breeding program database hosted by Sheep Ireland (<http://www.sheep.ie>) and provided by Teagasc, Animal & Grassland Research. The Animal Care and Use Committee approval was not necessary as the data were from an existing database. A total of 50,166 biallelic SNPs from the Illumina OvineSNP50 genotype panel were

available for the five commercial breeds, including Belclare (n = 2,444), Charollais (n = 1,500), Suffolk (n = 1,242), Texel (n = 3,399), and Vendéen (n = 1,114). These breeds are included in the Irish breeding program that focuses on meat production traits, such as growth rate and carcass quality (Bohan et al., 2019). All breeds were raised in Ireland, but only the Belclare (a composite breed) originates from the country. Charollais and Vendéen are originally from France, Suffolk from England, and Texel from the Netherlands.

Principal component analysis and linkage disequilibrium decay

Principal component analysis (PCA) was performed using PLINK v1.9 (Purcell et al., 2007) to assess genetic relationships among breeds. Quality control was carried out for all breeds, and SNPs with a call rate below 95% and SNPs with minor allele frequencies below 1% were discarded. After the quality control, 9,498 animals and 31,287 SNP remained for the PCA. Then, the eigenvectors computed for each animal were used to construct dispersion plots along the first two principal components (i.e., PC 1 and PC 2), which explained 36.87% and 16.90% of the total variance for the first and second principal components, respectively.

The linkage disequilibrium (r^2) among SNPs was estimated within each sheep breed separately using PLINK v1.9 (Purcell et al., 2007). The r^2 quantifies the extent of LD between pairs of loci (Hill, 1981). The estimation was performed within non-overlapping windows at 1 Mb, considering all r^2 between markers pairs (--ld-window-r2 0). The mean r^2 values were computed within 100 kb intervals, for each breed, spanning the entire 1 Mb distance (Supplementary Table S1).

Genetic diversity and selection signatures quality control

SNP filtering and quality control were performed within each breed using PLINK v1.9 (Purcell et al., 2007) to access the genetic diversity and detect selection signatures. Only SNPs on the autosomes with defined positions according to the sheep (*Ovis aries*) genome assembly 3.1 (OAR 3.1) were considered in the analyses. Samples and SNPs with a call rate below 95% were discarded, as were SNPs with minor allele frequencies below 1% and deviating from Hardy-Weinberg equilibrium

with $p\text{-value} \leq 10^{-6}$. The imputation of missing genotypes and haplotype phasing were performed using the software BEAGLE v.3.3.2 (Browning et al., 2018). After quality control, around 30k autosomal SNPs and 9,498 individuals remained for analyses. Detailed information for each breed is found in Table 1.

Table 1. Sample size and number of SNPs before and after quality control.

Breed	Purpose	Before Quality Control		After Quality Control	
		Sample size	Number of SNPs	Sample size	Number of SNPs
Belclare	Meat and prolific	2444	50166	2377	30949
Charollais	Meat	1500	50166	1477	31084
Suffolk	Meat	1241	50166	1231	28469
Texel	Meat	3399	50166	3330	30045
Vendéen	Meat	1114	50166	1083	29949

Genetic diversity metrics

The nucleotide diversity (π), inbreeding coefficient (F_{IS}), observed and expected heterozygosity (H_O and H_E , respectively), minor allele frequency (MAF), and average pairwise genetic distance (D) were calculated for each animal to understand the genetic diversity among and within the five sheep breeds. The π was estimated within a 100 kb window (*--window-pi 100,000*) stepping across the genome in 50 kb step sizes (*--window-pi-step 50,000*) via VCFtools. PLINK v1.9 (Purcell et al., 2007) was used to calculate the MAF (option *--maf*), H_O and H_E (option *--hardy*) and F_{IS} (option *--het*). The F_{IS} was calculated as: $F_{IS} = \frac{H_E - H_O}{H_E}$, based on the Wright's definition (Wright, 1950), to measure excess of homozygotes within each breed. The average proportion of alleles shared between two individuals (D_{ST}) in a breed was estimated using PLINK v1.9 (Purcell et al., 2007) with the option *--genome*, and the genetic distance between individuals in a sheep breed was calculated as $D = 1 - D_{ST}$.

Detection of selection signatures

The iHS and Tajima's D approaches were used in the present study to increase the ability and power to detect the selection signatures. The integrated

haplotype score (iHS) (Eq. 2) is based on the extended haplotype homozygosity (EHH). It compares the integrated EHH profiles between ancestral (0) and derived alleles (1) at a given SNP within a population (Voight et al., 2006). The iHS values were calculated with the REHH R package, version 3.2.2 (Gautier & Vitalis, 2012; Gautier et al., 2017), within 100 kb non-overlapping windows that had at least two SNPs per window. Extremely negative iHS scores indicate long haplotypes carrying the derived alleles, while extremely positive scores suggest an increase of long haplotypes carrying the ancestral alleles (Voight et al., 2006). The top 1% windows with the highest average $|iHS|$ values were considered regions under positive selection (Voight et al., 2006). The iHS metric was calculated as:

$$|iHS| = \frac{\ln\left(\frac{iHH_1}{iHH_0}\right) - E_P\left[\ln\left(\frac{iHH_1}{iHH_0}\right)\right]}{S_P\left[\ln\left(\frac{iHH_1}{iHH_0}\right)\right]} \quad (1)$$

where iHH_0 and iHH_1 corresponded to the integrated EHH score for ancestral and derived core alleles, respectively; E_P and S_P are the expectation and the standard deviation of the $|iHS|$ estimates in frequency bin p , respectively.

The Tajima's D statistic (Eq. 3) (Tajima, 1989) is based on the Site Frequency Spectrum (SFS) method, which compares the difference between the average number of differences in nucleotides ($\theta\pi$) and the number of segregating sites (θs) estimated from the SNP data (Carlson et al., 2005) and can identify low-to-medium frequency alleles. The Tajimas' D values were calculated via VCFtools in sliding windows of 100 kb (`--TajimaD 100000`). Positive and negative selection reduces heterozygosity and increases the number of rare alleles flanking the selected loci resulting in negative values (Saravanan et al., 2021). Using the Tajima's D approach, only negative values were considered, which correspond to recent positive selection signals (Korneliussen et al., 2013; Rajawat et al., 2022). Therefore, the bottommost 1% of empirical Tajima's D values (Korneliussen et al., 2013; Rajawat et al., 2022) that had at least two SNPs per window were considered as selection signature regions. The Tajima's D metric was calculated as:

$$\text{Tajima's } D = \frac{\theta_{\pi} - \theta_s}{\sqrt{\text{var}(\theta_{\pi} - \theta_s)}} \quad (2)$$

Gene annotation and functional enrichment analysis.

The gene annotation and functional enrichment analysis were performed separately considering one gene list derived from iHS and another from Tajima's D for each sheep breed. Gene and quantitative trait loci (QTL) annotation was performed within the selection signature regions using the GALLO R package (Fonseca et al., 2020). The ovine reference genome OAR3.1 and the SheepQTL database (<https://www.animalgenome.org/cgi-bin/QTLdb/OA/>) (Hu et al., 2018) were used in the gene and QTL searches, respectively. The Gene Ontology (GO) metabolic pathway retrieved from the Kyoto Encyclopedia of Genes and Genomes (KEGG) database was performed using the gprofiler2 R package (Kolberg et al., 2020; Raudvere et al., 2019). The gene network analysis was undertaken using the STRING software (Szklarczyk et al., 2023). The p-value of GO terms and KEGG pathways were adjusted for a False Discovery Rate (FDR) to control for false discoveries (Benjamini & Hochberg, 1995), and genes were considered enriched when FDR was less than 0.10.

3. RESULTS

Population structure and genetic diversity

The first four principal components in the PCA (Supplementary Figure S1) explained 78.24% of the total variance of the population structure among five sheep breeds. The Belclare breed partially overlapped with Texel while the Charollais partially overlapped with Veenden in the PC1 and PC2 (Fig. 1a). The mean r^2 for all sheep breeds within a 1 Mb window was 0.106. The average r^2 at 100 kb for Belclare, Charollais, Suffolk, Texel and Vendéen breeds was 0.173, 0.157, 0.197, 0.202 and 0.185, respectively (Supplementary Table S1). The overall average among breeds was 0.183. The Suffolk and Texel breeds showed the slowest decay in LD compared

to the other breeds (Fig. 1b) and had the greatest number of SNP pairs with $r^2 > 0.20$ (Supplementary Table S1).

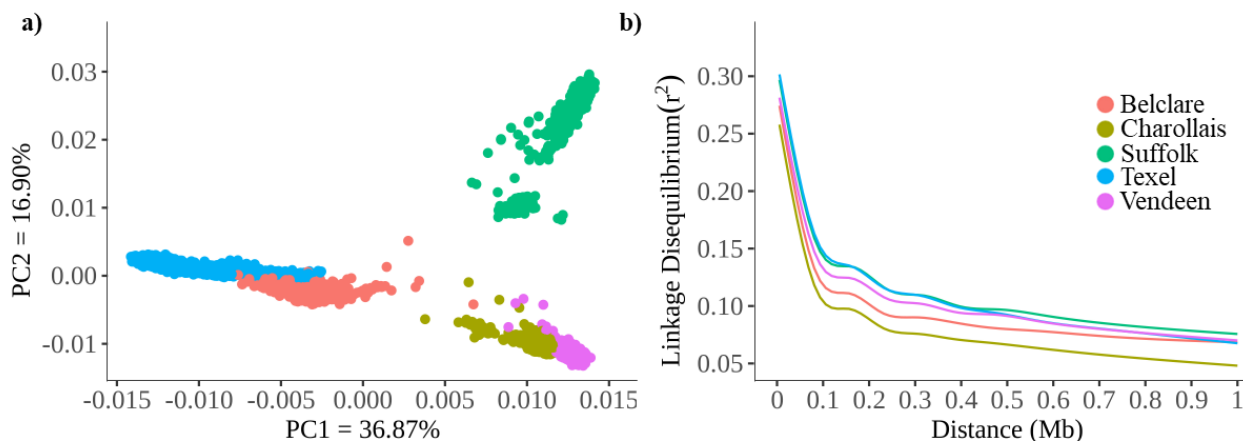


Figure 1. Population genetic analyses of five commercial sheep breeds. (a) Principal component analysis graph for the analyzed population. (b) Decay of linkage disequilibrium within breeds.

The mean H_O and H_E values for all breeds were 0.353 and 0.355, respectively (Table 2). The Belclare and Vendéen breeds had H_O values higher than their respective H_E , as evidenced by the negative F_{IS} values for both breeds. All breeds had similar D values, with the Charollais having the highest. The values of D reflect the homogeneity of animals within each breed, with higher values suggesting greater genetic variation. The Suffolk breed had the lowest mean for π , H_O , H_E , and MAF, while the Belclare and Charollais had the highest mean values for π , H_O , H_E , MAF, and D .

Table 2. Average of the within-breed genetic diversity metrics

Breed (sample size)	Belclare (n = 2377)	Charollais (n = 1477)	Suffolk (n = 1231)	Texel (n = 3330)	Vendéen (n = 1083)
π^*	3.5906	3.6061	3.4430	3.5218	3.4570
F_{IS}	-0.0022	0.0014	0.0234	0.0093	-0.0013
H_O	0.3633	0.3628	0.3386	0.3517	0.3493
H_E	0.3625	0.3633	0.3468	0.3550	0.3489
MAF	0.2767	0.2770	0.2628	0.2698	0.2637
D	0.2873	0.2886	0.2794	0.2836	0.2778

π : Nucleotide diversity; F_{IS} : Inbreeding coefficient; H_O : Observed heterozygosity; H_E : Expected heterozygosity; MAF: Minor allele frequency; D : Average pairwise genetic distance; *Values expressed as 10^{-3} .

Selection signatures detection

The distribution of |iHS| and Tajima's D values across the autosomes in the five sheep breeds within a 100 kb window is shown in Fig. 2 and Fig. 3, respectively. The number of selection signatures regions, genes, and QTL within the positive selection in the five studied commercial sheep breeds is presented in Table 3. The list of genes and QTL harboring the selection signatures is detailed in (Supplementary Table S2-S4). Selection signature regions overlapped and formed longer segments in all breeds for both methods. In the iHS method, Belclare, Charollais, Suffolk, and Texel breeds formed selection signatures with lengths of 200 kb, and in the Tajimas' D method, Belclare and Texel formed signatures with lengths of up to 300 kb (Supplementary Table S2).

Table 3. Number of selection signatures, genes, and QTL within positive selection in five commercial sheep breeds detected using iHS and Tajima's D methods

Breed	his			Tajima's D		
	Selection signatures	Genes	QTL	Selection signatures	Genes	QTL
Belclare	77	84	162	140	177	218
Charollais	84	88	125	110	145	203
Suffolk	68	85	158	220	255	290
Texel	79	124	96	146	159	240
Vendéen	73	94	185	242	252	259

QTL: quantitative trait loci.

Belclare and Texel breeds had four and 21 common regions detected between both breeds for iHS and Tajima's D, respectively (Fig. 4), the highest number of common selection signature regions shared between breeds. The common selection signatures regions and genes between the two methods is shown in Table 4 and Fig. 5, respectively. The results from the metabolic pathways and GO terms are shown in Supplementary Table S5, and the results from the gene network analyses are shown in Supplementary Figure S3 – S4.

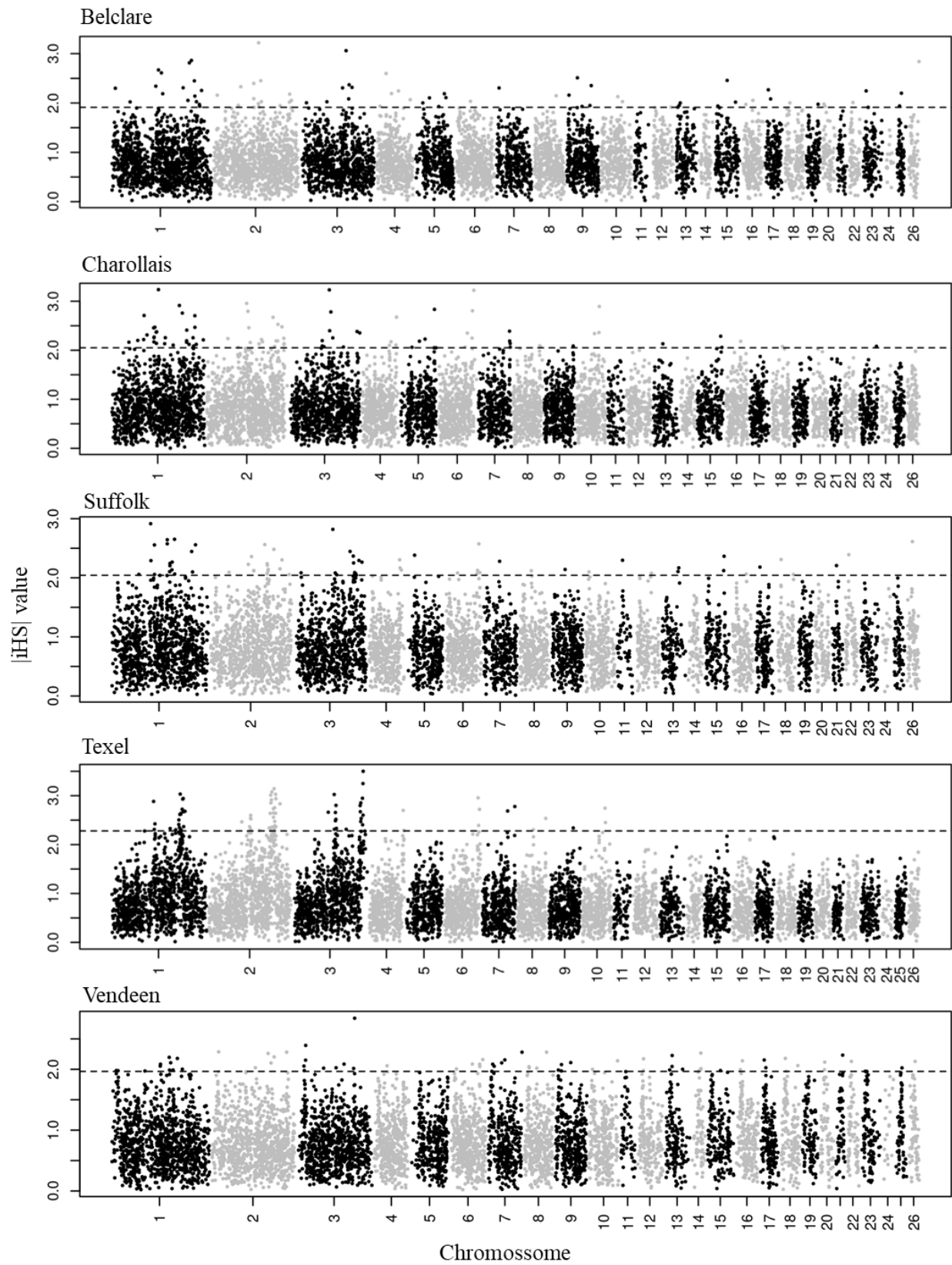


Figure 2. Manhattan plots of iHS values within 100 kb window in the five sheep breeds. The horizontal dashed line represents the cutoff of the top 1% windows with the highest average $|iHS|$ values that were considered as regions under positive selection.

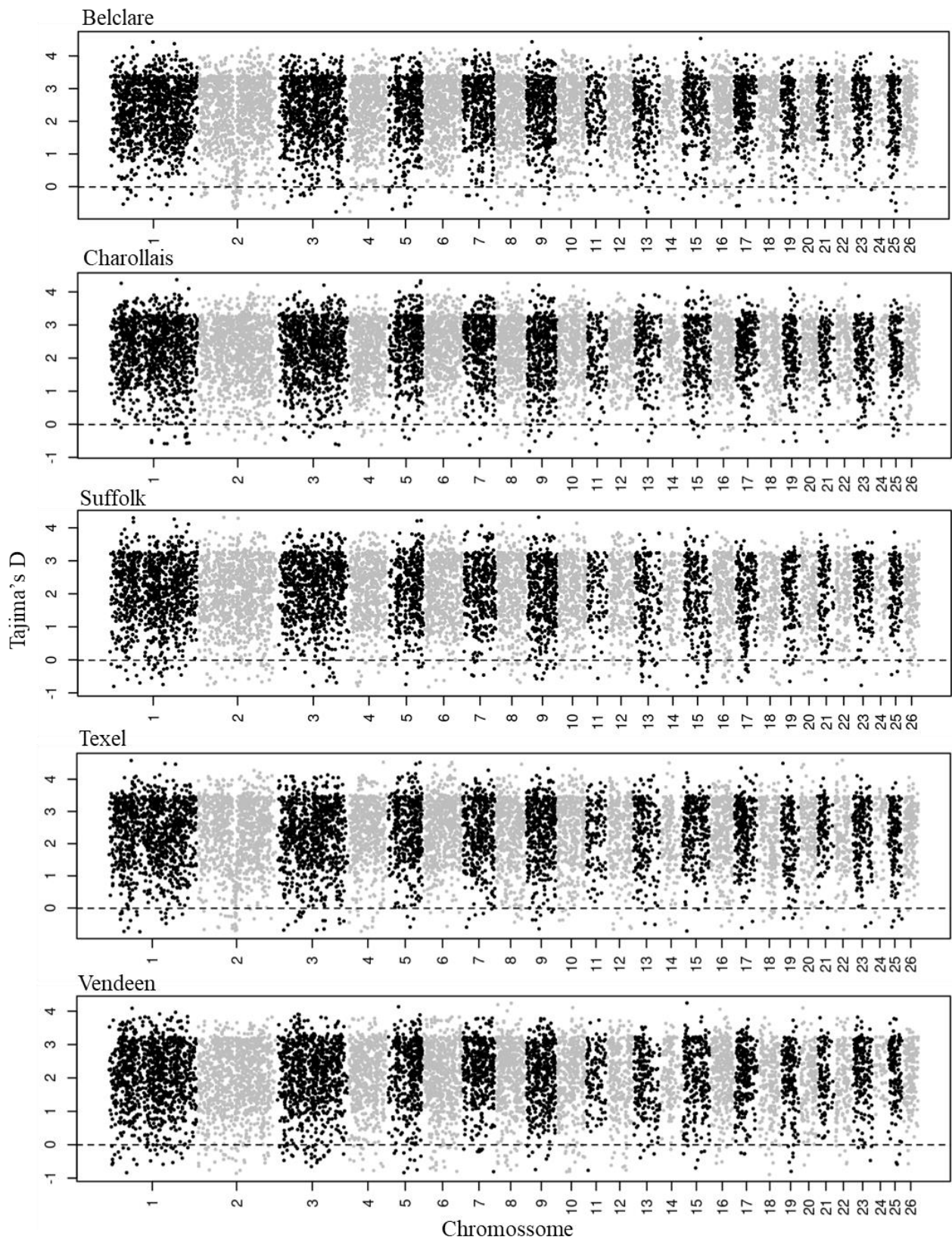


Figure 3. Manhattan plots of Tajima's D values within 100 kb window in five commercial sheep breeds. The horizontal dashed line represents the cutoff of the bottommost 1% of empirical Tajima's D values that were considered regions under positive selection.

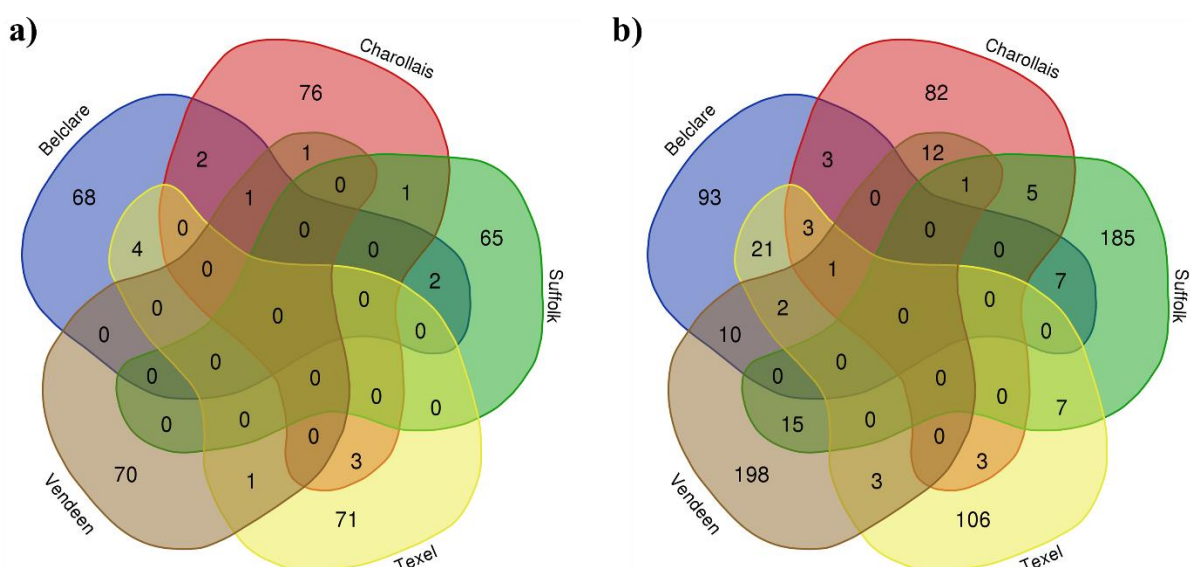


Figure 4. Common selection signatures regions among sheep breeds, detected using (a) iHS and (b) Tajima's D approaches.

Table 4. Common selection signatures regions between iHS and Tajimas' D methods in five commercial sheep breeds

Breed	Chromosome	Position (bp)	Gene
Belclare	3	77400000:77500000	SOCS5
Charollais	1	261300000:261400000	CBS, CRYAA, ENSOARG00000011162
Suffolk	3	23500000:23600000	NBAS
Texel	2	128400000:128500000	
	2	129800000:129900000	LOC101122080
			ATP6V1E1,
	3	213000000:213100000	ENSOARG0000001347, ENSOARG00000013505
Vendéen	1	198000000:198100000	
	1	185400000:185500000	SLC49A4
	1	212500000:212600000	SPATA16
	2	166000000:166100000	
	2	128700000:128800000	
	13	22100000:22200000	DNAJC1
	16	14700000:14800000	CWC27, SREK1IP1, SHISAL2B, ENSOARG00000025172

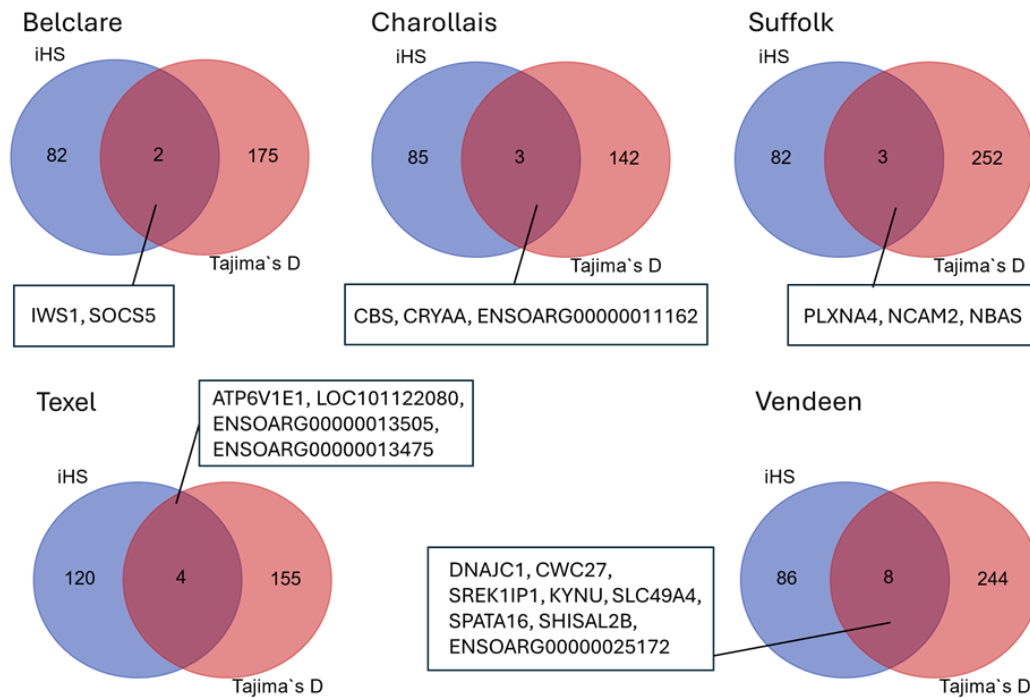


Figure 5. Common candidate genes detected by iHS and Tajima's D methods within the selection signatures regions in five commercial sheep breeds

4. DISCUSSION

Genetic diversity

The mean nucleotide diversity for the five sheep breeds was 3.5×10^{-3} , which is comparable to those observed in the literature for domestic sheep, whose values ranged from 1.7×10^{-3} to 3.1×10^{-3} (Feng-Hua et al., 2022). Nucleotide diversity is a popular metric to quantify the extent of genetic variation in populations (Wang et al., 2023). Low diversity in sheep is generally associated with a high degree of selection and breeding (Shi et al., 2023), isolation, small effective population size, or endogamy (Barbosa et al., 2021). In the present study, the breeds were expected to have relatively low diversity, as sheep from Europe have a long history of breed formation and selective breeding (Feng-Hua et al., 2022). Belclare is a composite breed and might be expected to have high diversity. However, it experienced intense selection pressure during breed formation, which might explain the low nucleotide diversity values. Regardless of the low values of nucleotide diversity, MAF and D in

Belclare, Charollais, Suffolk, Texel, and Vendéen, variability did exist which suggests that besides the historical formation, the breeds also responded to artificial selection but in different forms due to distinct selection pressures.

The lower genetic diversity found in the Suffolk population, i.e. relatively lower nucleotide diversity, higher inbreeding coefficient, and lower observed heterozygosity, minor allele frequency and average pairwise genetic distance (Table 2) might be attributable to its small effective population size in Ireland (Purfield et al., 2017). The Suffolk breed imported into Ireland may have passed through genetic bottlenecks resulting from sudden population reduction (Rafter et al., 2022), which was evidenced by Purfield et al. (2017) who reported a greater proportion of the autosomes of Irish Suffolk (which overlapped with those animals used in the present study) covered by short ROH.

The mean H_E for all the studied breeds was high, which might be due to their breeding history. Similar H_E estimates were reported for composite and Texel breeds raised in New Zealand with an average of 0.346 (Brito et al., 2017b) as well as in a variety of sheep breeds worldwide, which ranged from 0.22 to 0.38 (Kijas et al., 2012). The sheep breeds with the greatest genetic diversity show lower mean LD and faster LD decay (Kijas et al., 2014). In the present study, the Belclare and Charollais populations had the greatest genetic diversity, the lowest r^2 , and a sharp decline in LD (Fig.1b; Supplementary Table S1), which might indicate a lower level of selection intensity when compared to the other studied breeds. Suffolk and Texel had the least diversity and higher and persistent r^2 over distances of the studied breeds indicating they might have experienced the greatest selection pressure over time and/or population bottlenecks.

The high observed heterozygosity in Belclare breed can be due to their breed formation. Belclare is a composite breed (37.5% Texel, 25.0% Lleyn, 19.5% Finn, 9.0% Galway, 2.5% Cheviot, 1.5% Suffolk, 1.0% Border Leicester, and 4% unknown) produced by crossbreeding to develop animals with a high ovulation rate (Cunningham, 2022) and good meat quality and production. The cross with Texel was undertaken to select alleles favourable for muscularity, such as the myostatin gene *MSTN* (Purfield et al., 2017). Besides being related to breed formation, the observed higher genetic diversity detected in the Belclare breed might also be due to

selection for carcass traits in this breed (Purfield et al., 2017). In the Charollais breed, a greater nucleotide diversity, observed heterozygosity, minor allele frequency and average pairwise genetic distance might be due to the higher effective number of founders in this breed (Rafter et al., 2022) and less selection pressure, as evidenced by the lower LD (Fig. 1b).

Demographic history can also explain the diversity observed between and within breeds, and it can be investigated using the PCA. In the present study, PCA revealed genetic similarities between the Belclare and Texel breeds, aligning with the results of O'Brien et al. (2020) who also compared these breeds; this overlap can be attributed to the Texel being used to develop the Belclare breed. Charollais and Vendéen breeds partially overlapped in the PC1 and PC2, probably because both were originated in France; nonetheless, differences between the two breeds in their genetic diversity parameters reflects their different historical selection processes. Suffolk formed two distinct subpopulations in the PCA, which might have been due to the importation of New Zealand Suffolks into Ireland (Featherstone et al., 2021) similar to that documented by O'Brien et al. (2020) also for Irish Suffolks. Nevertheless, maintaining the genetic diversity within breeds is key to breeding programs and conservation strategies; thus, the genetic diversity should be monitored over time (Brito et al., 2017b; Rafter et al., 2022).

Selection signatures and identification of candidate genes

The selection signatures created by natural and artificial selection in sheep can be shared among breeds or be breed-specific, depending on the selection criteria and environment that influenced their breed formation and breeding program. The present study identified common selection signatures between the two methods applied, which might provide more robust evidence of genomic regions related to the selection process (Shi et al., 2023). Belclare, Charollais, Texel, and Vendéen had a common region with selection signature identified by Tajima's D that harbored the gene *WDR70* on OAR16, which was previously associated with milk traits in indigenous sheep breeds from the Middle East and South Asia (Eydivandi et al., 2021). The *SCMH* gene, identified as a candidate gene for body weight in Hu sheep,

harbored the selection signatures on OAR1 in Belclare, Suffolk, and Vendéen (Cao et al., 2020).

Regions with selection signatures overlapped and longer selection signature segments were created. Belclare and Texel overlapped the same region (129400000-129700000) on OAR2 with a region 300 kb in length, covering the gene *ZNF385B*, previously related to live body weight and body conformation traits in Karachai goats (Selionova et al., 2022). The extended lengths of haplotypes can indicate regions that have undergone a recent positive selection (Saravanan et al., 2020). The shared selection signature regions between the Belclare and Texel breeds can be attributed to the historical formation of the Belclare breed, where Texel played an important role, particularly in enhancing meat quality traits.

Candidate genes associated with meat quality were identified within the selection signatures of Suffolk, including the *MYH15* gene on OAR1 and the myosin complex term (GO:0016459) which is involved in muscle fibre and plays an important role in meat tenderness (Yuan et al., 2022). Purfield et al. (2017) identified genes involved in muscle differentiation harboring selection signatures regions on OAR2, such as *ITGAV*, *BIN1*, *MSTN* and *NUP35* in Irish Belclare and Texel using the Fst and hapFLK methods. Although the present study did not detect these genes, it might be due to the different approaches used to detect selection signatures, so the findings are complementary and help understand the genetic mechanisms related to meat quality traits.

All breeds had selection signatures co-localized in QTL regions for fecal egg count (FEC) trait for the most common nematodes in sheep, *Haemonchus contortus* and *Trichostrongylus colubriformis*. The FEC is the most common phenotypic measure used to select sheep resistant to endoparasites (Zvinorova et al., 2016). Several candidate genes associated with resistance to endoparasites were identified within the selection signatures in the present study, including *TGFB2* in Vendéen, *ITGA4* in Texel, and *TLR3* in Suffolk. The *TGFB2* gene harbored selection signatures in resistant St. Croix and Katahdin sheep breeds and is related to the immune system (Estrada-Reyes et al., 2019b). The genes *ITGA4* and *TLR3* were related to initial rejection and innate immune response infection of *H. contortus* in Florida Native sheep (Estrada-Reyes et al., 2019a).

Selection signatures related to reproduction traits were detected in the present study, including total number of lambs born which is associated with the prolificacy (Abdoli et al., 2016) as well as overall profitability of meat sheep systems (Bohan et al., 2019). Two candidate genes within the selection signatures, *DLG1* and *ROBO2*, in Suffolk were previously associated with the ovary development process in indigenous Pelibuey breed (Hernández-Montiel et al., 2020). The gene *MXI1* identified within the selection signature regions in Texel and Belclare play a positive effect on follicular development in sheep (Wang et al., 2022). Identifying selection signatures and genes related to reproduction traits may help to understand the genetic mechanisms involved in this polygenic trait.

Candidate genes related to ram reproduction were also identified within the selection signature regions detected in the present study. Several candidate genes in the Texel breed, such as *MTMR2*, *CEP57*, and *FAM76B*, were previously reported in the Merino sheep breed to be highly expressed in the testicles, acting in sperm motility (Hodge et al., 2023). Therefore, these genes may play an important role in semen quality and in consequence may increase the chance of successful fertilisation.

Sheep adaptation to different environments might help them to develop different taste perceptions and food preferences. The type two taste receptors (*TAS2R*) genes that distinguish bitter-tasting compounds (Henslee et al., 2020), including *TAS2R4* in Texel and *TAS2R39* and *TAS2R40* in Charollais, were identified within the selection signatures in OAR4. These genes have also been previously related to bitter taste in humans, goats, cattle, and dogs (Henslee et al., 2020). The capacity to recognize the bitter taste in grazing animals is associated with a defense strategy against ingesting toxic plants and shrubs (Henslee et al., 2020; Jeruzal-Świątecka et al., 2020). The selective food preferences of sheep might result from evolutionary processes, as their aversion to particular tastes plays a vital role in species adaptation and survival.

5. CONCLUSION

In conclusion, the study examined the genetic diversity and selection signatures in Belclare, Charollais, Suffolk, Texel and Vendeen sheep breeds. The results demonstrated that Suffolk had the least genetic diversity and, along with Texel, had the slowest rate of linkage disequilibrium decay among the studied breeds. We identified several common regions under selection across breeds and between methodologies. The genes detected within the selection signature regions, including *TLR3* and *TGFB2*, were related to the immune system against endoparasites; *DLG1*, *ROBO2*, *MXI1*, *MTMR2*, *CEP57*, and *FAM78B* related to reproductive traits; and *TAS2R4*, *TAS2R39*, and *TAS2R40* related to adaptive traits. In conclusion, our results demonstrated moderate genetic diversity in the commercial sheep breeds raised in Ireland. The detected selection signatures harbored genes associated with reproductive traits, milk production, meat production, and adaptive traits such as endoparasite resistance. Therefore, our study provided insights into the genomic mechanisms, enhancing our understanding of the genes involved in economic and adaptive traits.

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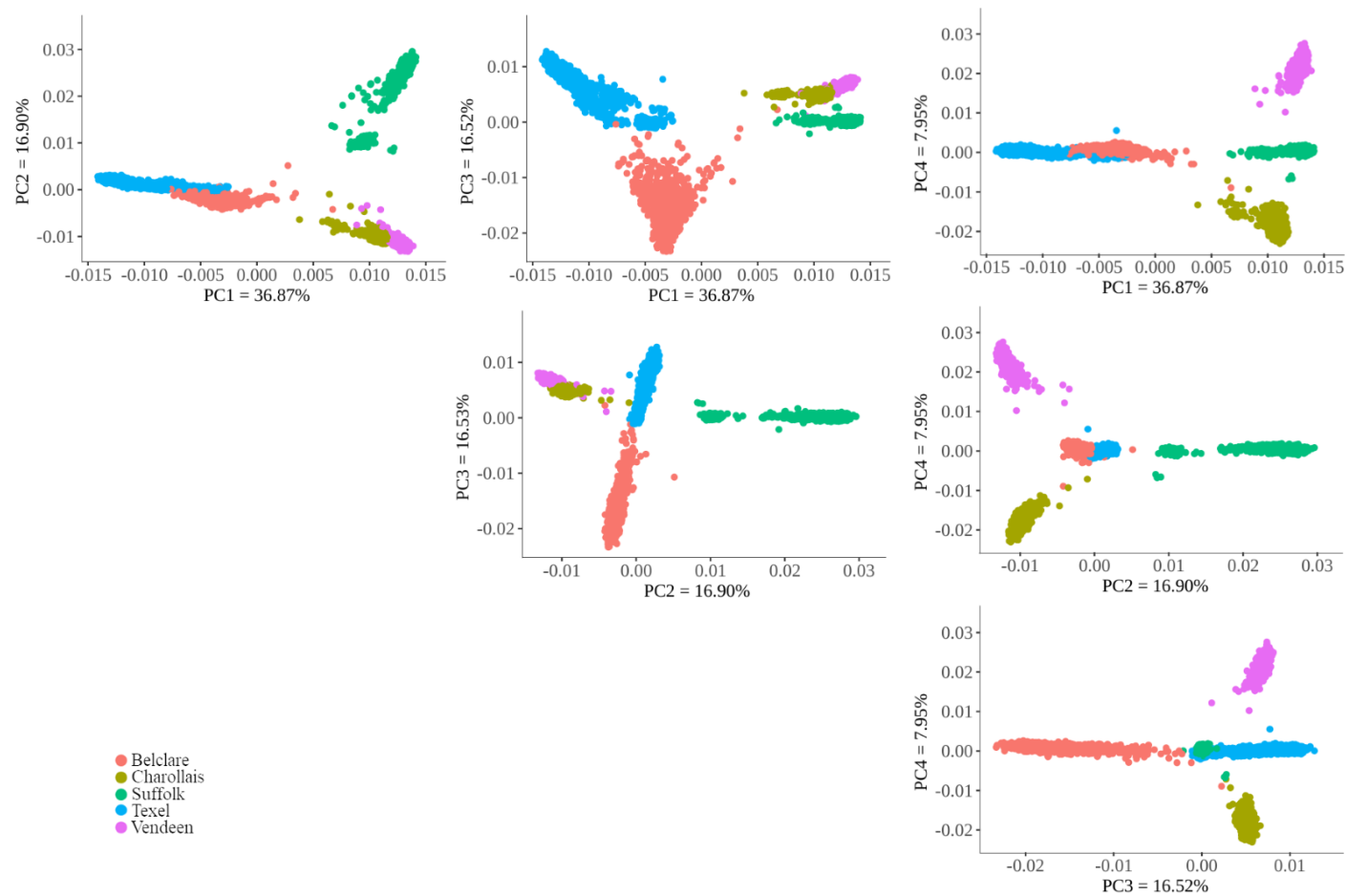
APPENDIX

Appendix information

Supplementary Table S1. Mean linkage disequilibrium (r^2) for different distances for five sheep breeds.

Distance range (Mb)	Belclare			Charollais			Suffolk			Texel			Vendéen		
	Mean	NP	NP > 0.20	Mean	NP	NP > 0.20	Mean	NP	NP > 0.20	Mean	NP	NP > 0.20	Mean	NP	NP > 0.20
0-0.1	0.173	36363	10280	0.157	36524	9263	0.197	31160	9998	0.202	34360	11327	0.185	34034	10286
0.1-0.2	0.110	41402	7391	0.096	41532	6051	0.135	35328	8059	0.136	39039	9071	0.124	38629	7978
0.2-0.3	0.094	40791	6004	0.081	41007	4703	0.115	34686	6682	0.115	38509	7516	0.107	38102	6669
0.3-0.4	0.087	39701	5247	0.073	39819	4059	0.104	33996	5788	0.104	37406	6323	0.098	37342	5797
0.4-0.5	0.082	34655	4139	0.069	34776	3101	0.099	30719	4908	0.095	33149	4986	0.093	33207	4843
0.5-0.6	0.079	25795	2921	0.064	26192	2047	0.093	24520	3594	0.089	25604	3521	0.088	25683	3384
0.6-0.7	0.075	17502	1845	0.060	17651	1226	0.089	17783	2459	0.082	17707	2167	0.082	18064	2137
0.7-0.8	0.072	11632	1120	0.057	11700	722	0.084	12564	1568	0.078	12076	1347	0.078	12289	1345
0.8-0.9	0.072	7788	768	0.051	7730	425	0.079	8860	1028	0.076	8206	896	0.076	8130	836
0.9-1.0	0.068	5253	480	0.050	5276	270	0.078	6093	688	0.069	5633	534	0.071	5495	503
1 Mb	0.100	260882	40195	0.086	262207	31867	0.117	235709	44772	0.117	251689	47688	0.110	250975	43778

NP: number of SNP pairs, NP > 0.20: number of SNP pairs with mean linkage disequilibrium higher than 0.20



Supplementary Figure S1. Principal component analysis of five sheep breeds distributed across the first four principal components.

Supplementary Table S2. Selection signatures detected by iHS and Tajima's D method within 100kb

Breed	Method	CHR	Start	End	Value	N_SNPS	len
Belclare	iHS	2	116000000	116200000	2.398, 2.088	3, 2	2.00E+05
Belclare	iHS	1	16800000	16900000	2,299	2	1.00E+05
Belclare	iHS	1	58900000	5.9e+07	2,022	2	1.00E+05
Belclare	iHS	1	132100000	132200000	2,341	2	1.00E+05
Belclare	iHS	1	139700000	139800000	2,671	2	1.00E+05
Belclare	iHS	1	148100000	148200000	2,611	2	1.00E+05
Belclare	iHS	1	151800000	151900000	2,188	2	1.00E+05
Belclare	iHS	1	2.1e+08	210100000	2,309	2	1.00E+05
Belclare	iHS	1	223700000	223800000	2,053	2	1.00E+05
Belclare	iHS	1	227700000	227800000	2,814	2	1.00E+05
Belclare	iHS	1	233600000	233700000	2,863	2	1.00E+05
Belclare	iHS	1	2.42e+08	242100000	2,449	2	1.00E+05
Belclare	iHS	1	243400000	243500000	2.14	2	1.00E+05
Belclare	iHS	1	247900000	2.48e+08	2,026	2	1.00E+05
Belclare	iHS	1	256300000	256400000	1,971	2	1.00E+05
Belclare	iHS	1	257300000	257400000	1,935	2	1.00E+05
Belclare	iHS	1	262500000	262600000	2,254	2	1.00E+05
Belclare	iHS	2	1.2e+07	12100000	2,158	3	1.00E+05
Belclare	iHS	2	71900000	7.2e+07	1,953	2	1.00E+05
Belclare	iHS	2	78900000	7.9e+07	2,331	2	1.00E+05
Belclare	iHS	2	116800000	116900000	1,912	3	1.00E+05
Belclare	iHS	2	129100000	129200000	1,987	2	1.00E+05
Belclare	iHS	2	129900000	1.3e+08	3,221	3	1.00E+05
Belclare	iHS	2	130800000	130900000	1,924	2	1.00E+05
Belclare	iHS	2	1.36e+08	136100000	2,452	2	1.00E+05
Belclare	iHS	2	137700000	137800000	2,027	2	1.00E+05
Belclare	iHS	2	1.91e+08	191100000	1,946	2	1.00E+05
Belclare	iHS	2	217700000	217800000	2,018	4	1.00E+05
Belclare	iHS	2	218400000	218500000	2,181	3	1.00E+05
Belclare	iHS	2	223200000	223300000	2,052	2	1.00E+05
Belclare	iHS	3	19200000	19300000	2,005	2	1.00E+05
Belclare	iHS	3	77400000	77500000	2,025	3	1.00E+05
Belclare	iHS	3	122100000	122200000	2,307	2	1.00E+05
Belclare	iHS	3	132100000	132200000	3,061	2	1.00E+05
Belclare	iHS	3	139500000	139600000	2,083	2	1.00E+05
Belclare	iHS	3	140800000	140900000	2,369	2	1.00E+05
Belclare	iHS	3	149100000	149200000	2,316	2	1.00E+05
Belclare	iHS	4	10700000	10800000	1,936	3	1.00E+05
Belclare	iHS	4	28100000	28200000	2,598	2	1.00E+05

Belclare	iHS	4	43600000	43700000	2,192	2	1.00E+05
Belclare	iHS	4	63400000	63500000	2,244	2	1.00E+05
Belclare	iHS	4	96900000	9.7e+07	2,068	2	1.00E+05
Belclare	iHS	5	22200000	22300000	2,002	3	1.00E+05
Belclare	iHS	5	41100000	41200000	2,104	2	1.00E+05
Belclare	iHS	5	67600000	67700000	1,928	2	1.00E+05
Belclare	iHS	5	83600000	83700000	2,189	2	1.00E+05
Belclare	iHS	5	88100000	88200000	2,109	3	1.00E+05
Belclare	iHS	6	43200000	43300000	2,034	2	1.00E+05
Belclare	iHS	7	9100000	9200000	2,305	2	1.00E+05
Belclare	iHS	8	64200000	64300000	2,147	3	1.00E+05
Belclare	iHS	9	7900000	8.00E+06	2.16	2	1.00E+05
Belclare	iHS	9	31900000	3.2e+07	2,511	2	1.00E+05
Belclare	iHS	9	45100000	45200000	1.93	2	1.00E+05
Belclare	iHS	9	67600000	67700000	1,949	2	1.00E+05
Belclare	iHS	9	71300000	71400000	2,353	3	1.00E+05
Belclare	iHS	10	49100000	49200000	2,129	2	1.00E+05
Belclare	iHS	10	62400000	62500000	2,028	2	1.00E+05
Belclare	iHS	12	59300000	59400000	1,916	2	1.00E+05
Belclare	iHS	13	8400000	8500000	1,914	3	1.00E+05
Belclare	iHS	13	12500000	12600000	1,951	2	1.00E+05
Belclare	iHS	13	15400000	15500000	2,002	2	1.00E+05
Belclare	iHS	15	10100000	10200000	1,938	2	1.00E+05
Belclare	iHS	15	36700000	36800000	2,458	2	1.00E+05
Belclare	iHS	15	60500000	60600000	2,018	2	1.00E+05
Belclare	iHS	16	1.3e+07	13100000	1,972	2	1.00E+05
Belclare	iHS	16	3.3e+07	33100000	2,054	2	1.00E+05
Belclare	iHS	17	9900000	1.00E+07	2,268	3	1.00E+05
Belclare	iHS	17	16400000	16500000	2,082	2	1.00E+05
Belclare	iHS	18	17500000	17600000	2,003	2	1.00E+05
Belclare	iHS	19	36200000	36300000	1,975	2	1.00E+05
Belclare	iHS	20	6300000	6400000	1,979	3	1.00E+05
Belclare	iHS	20	9400000	9500000	1,935	2	1.00E+05
Belclare	iHS	22	12800000	12900000	2.01	2	1.00E+05
Belclare	iHS	23	12600000	12700000	2,245	3	1.00E+05
Belclare	iHS	25	12500000	12600000	1,939	2	1.00E+05
Belclare	iHS	25	17800000	17900000	2,199	2	1.00E+05
Belclare	iHS	26	32900000	3.3e+07	2,841	2	1.00E+05
Charollais	iHS	1	235600000	235800000	2.164, 2.194	2, 2	2.00E+05
Charollais	iHS	2	241200000	241400000	2.117, 2.244	2, 3	2.00E+05
Charollais	iHS	3	1.04e+08	104200000	2.196, 2.087	3, 2	2.00E+05

Charollais	iHS	1	56300000	56400000	2,164	3	1.00E+05
Charollais	iHS	1	83800000	83900000	2,201	2	1.00E+05
Charollais	iHS	1	102100000	102200000	2,218	2	1.00E+05
Charollais	iHS	1	103400000	103500000	2,709	2	1.00E+05
Charollais	iHS	1	112500000	112600000	2,313	2	1.00E+05
Charollais	iHS	1	133200000	133300000	2,457	2	1.00E+05
Charollais	iHS	1	1.34e+08	134100000	2,171	3	1.00E+05
Charollais	iHS	1	134200000	134300000	2,257	2	1.00E+05
Charollais	iHS	1	134600000	134700000	2,269	3	1.00E+05
Charollais	iHS	1	136900000	1.37e+08	2.47	3	1.00E+05
Charollais	iHS	1	140900000	1.41e+08	2,369	2	1.00E+05
Charollais	iHS	1	141800000	141900000	2.14	3	1.00E+05
Charollais	iHS	1	142600000	142700000	2,376	2	1.00E+05
Charollais	iHS	1	148100000	148200000	3,237	2	1.00E+05
Charollais	iHS	1	167400000	167500000	2,134	3	1.00E+05
Charollais	iHS	1	169500000	169600000	2,256	2	1.00E+05
Charollais	iHS	1	193900000	1.94e+08	2,105	2	1.00E+05
Charollais	iHS	1	213200000	213300000	2,914	2	1.00E+05
Charollais	iHS	1	222400000	222500000	2,758	2	1.00E+05
Charollais	iHS	1	236100000	236200000	2,411	2	1.00E+05
Charollais	iHS	1	243400000	243500000	2.12	2	1.00E+05
Charollais	iHS	1	255700000	255800000	2,255	2	1.00E+05
Charollais	iHS	1	257300000	257400000	2,086	2	1.00E+05
Charollais	iHS	1	261300000	261400000	2,705	2	1.00E+05
Charollais	iHS	1	261500000	261600000	2,468	2	1.00E+05
Charollais	iHS	1	265700000	265800000	2,121	3	1.00E+05
Charollais	iHS	1	287600000	287700000	2,212	2	1.00E+05
Charollais	iHS	2	67200000	67300000	2,238	2	1.00E+05
Charollais	iHS	2	99400000	99500000	2,059	2	1.00E+05
Charollais	iHS	2	125600000	125700000	2,956	2	1.00E+05
Charollais	iHS	2	129600000	129700000	2,794	2	1.00E+05
Charollais	iHS	2	132500000	132600000	2.46	3	1.00E+05
Charollais	iHS	2	136800000	136900000	2,158	2	1.00E+05
Charollais	iHS	2	164200000	164300000	2.13	2	1.00E+05
Charollais	iHS	2	171800000	171900000	2,219	2	1.00E+05
Charollais	iHS	2	174900000	1.75e+08	2,174	4	1.00E+05
Charollais	iHS	2	207600000	207700000	2,673	2	1.00E+05
Charollais	iHS	2	212700000	212800000	2,077	3	1.00E+05
Charollais	iHS	2	217200000	217300000	2,191	3	1.00E+05
Charollais	iHS	2	2.22e+08	222100000	2,191	2	1.00E+05
Charollais	iHS	2	222900000	2.23e+08	2,528	2	1.00E+05

Charollais	iHS	2	235300000	235400000	2,478	2	1.00E+05
Charollais	iHS	2	242100000	242200000	2,134	2	1.00E+05
Charollais	iHS	3	109400000	109500000	2,072	3	1.00E+05
Charollais	iHS	3	126100000	126200000	3,232	2	1.00E+05
Charollais	iHS	3	127100000	127200000	2,398	3	1.00E+05
Charollais	iHS	3	130900000	1.31e+08	2,781	2	1.00E+05
Charollais	iHS	3	136800000	136900000	2,253	2	1.00E+05
Charollais	iHS	3	169900000	1.7e+08	2,066	2	1.00E+05
Charollais	iHS	3	212300000	212400000	2,383	3	1.00E+05
Charollais	iHS	3	220600000	220700000	2,354	3	1.00E+05
Charollais	iHS	4	85800000	85900000	2,099	2	1.00E+05
Charollais	iHS	4	90700000	90800000	2,173	2	1.00E+05
Charollais	iHS	4	1.06e+08	106100000	2,106	3	1.00E+05
Charollais	iHS	4	107800000	107900000	2,675	2	1.00E+05
Charollais	iHS	5	36900000	3.7e+07	2,062	2	1.00E+05
Charollais	iHS	5	6.00E+07	60100000	2,184	2	1.00E+05
Charollais	iHS	5	77500000	77600000	2,227	2	1.00E+05
Charollais	iHS	5	106700000	106800000	2,834	2	1.00E+05
Charollais	iHS	5	111300000	111400000	2.05	2	1.00E+05
Charollais	iHS	6	84400000	84500000	2,065	2	1.00E+05
Charollais	iHS	6	91400000	91500000	2,351	2	1.00E+05
Charollais	iHS	6	106100000	106200000	2,248	3	1.00E+05
Charollais	iHS	6	107300000	107400000	2,805	2	1.00E+05
Charollais	iHS	6	111500000	111600000	3,224	2	1.00E+05
Charollais	iHS	7	97700000	97800000	2,389	2	1.00E+05
Charollais	iHS	7	98100000	98200000	2,189	2	1.00E+05
Charollais	iHS	7	99700000	99800000	2,139	3	1.00E+05
Charollais	iHS	7	1.00E+08	100100000	2,062	2	1.00E+05
Charollais	iHS	8	83200000	83300000	2,091	2	1.00E+05
Charollais	iHS	8	84700000	84800000	2,078	2	1.00E+05
Charollais	iHS	9	91100000	91200000	2,086	2	1.00E+05
Charollais	iHS	10	5.6e+07	56100000	2.34	2	1.00E+05
Charollais	iHS	10	69700000	69800000	2,361	2	1.00E+05
Charollais	iHS	10	7.1e+07	71100000	2,893	2	1.00E+05
Charollais	iHS	13	30900000	3.1e+07	2,132	2	1.00E+05
Charollais	iHS	15	73500000	73600000	2,286	3	1.00E+05
Charollais	iHS	15	77400000	77500000	2,058	2	1.00E+05
Charollais	iHS	16	48300000	48400000	2,183	2	1.00E+05
Charollais	iHS	18	36200000	36300000	2,075	3	1.00E+05
Charollais	iHS	23	54600000	54700000	2,081	2	1.00E+05
Suffolk	iHS	1	171700000	171900000	2.576, 2.644	2, 3	2.00E+05

Suffolk	iHS	1	179800000	1.8e+08	2.205, 2.244	2, 2	2.00E+05
Suffolk	iHS	2	171900000	172100000	2.068, 2.238	2, 4	2.00E+05
Suffolk	iHS	1	86700000	86800000	2,057	3	1.00E+05
Suffolk	iHS	1	121900000	1.22e+08	2,915	2	1.00E+05
Suffolk	iHS	1	122800000	122900000	2.29	2	1.00E+05
Suffolk	iHS	1	133300000	133400000	2,556	2	1.00E+05
Suffolk	iHS	1	133600000	133700000	2,056	2	1.00E+05
Suffolk	iHS	1	178900000	1.79e+08	2,104	3	1.00E+05
Suffolk	iHS	1	185600000	185700000	2,135	3	1.00E+05
Suffolk	iHS	1	186500000	186600000	2,266	2	1.00E+05
Suffolk	iHS	1	193500000	193600000	2,652	2	1.00E+05
Suffolk	iHS	1	193900000	1.94e+08	2,064	2	1.00E+05
Suffolk	iHS	1	244800000	244900000	2,445	2	1.00E+05
Suffolk	iHS	1	247400000	247500000	2,098	2	1.00E+05
Suffolk	iHS	1	256300000	256400000	2,558	2	1.00E+05
Suffolk	iHS	2	57800000	57900000	2,093	2	1.00E+05
Suffolk	iHS	2	115700000	115800000	2,227	2	1.00E+05
Suffolk	iHS	2	125200000	125300000	2,359	2	1.00E+05
Suffolk	iHS	2	1.32e+08	132100000	2,117	2	1.00E+05
Suffolk	iHS	2	132200000	132300000	2,122	2	1.00E+05
Suffolk	iHS	2	1.65e+08	165100000	2,561	2	1.00E+05
Suffolk	iHS	2	172700000	172800000	2,214	2	1.00E+05
Suffolk	iHS	2	174400000	174500000	2,113	2	1.00E+05
Suffolk	iHS	2	175300000	175400000	2,142	2	1.00E+05
Suffolk	iHS	2	192200000	192300000	2,481	2	1.00E+05
Suffolk	iHS	2	210500000	210600000	2,152	3	1.00E+05
Suffolk	iHS	2	216600000	216700000	2,302	2	1.00E+05
Suffolk	iHS	2	238100000	238200000	2,055	3	1.00E+05
Suffolk	iHS	3	23500000	23600000	2,084	2	1.00E+05
Suffolk	iHS	3	118600000	118700000	2,819	2	1.00E+05
Suffolk	iHS	3	125900000	1.26e+08	2,082	2	1.00E+05
Suffolk	iHS	3	129900000	1.3e+08	2,051	2	1.00E+05
Suffolk	iHS	3	170300000	170400000	2,446	3	1.00E+05
Suffolk	iHS	3	179900000	1.8e+08	2,367	2	1.00E+05
Suffolk	iHS	3	180800000	180900000	2,251	2	1.00E+05
Suffolk	iHS	3	182700000	182800000	2,046	2	1.00E+05
Suffolk	iHS	3	184100000	184200000	2,088	2	1.00E+05
Suffolk	iHS	3	1.87e+08	187100000	2.07	2	1.00E+05
Suffolk	iHS	3	1.89e+08	189100000	2,045	2	1.00E+05
Suffolk	iHS	3	196900000	1.97e+08	2,293	2	1.00E+05
Suffolk	iHS	3	205900000	2.06e+08	2,265	2	1.00E+05

Suffolk	iHS	4	94800000	94900000	2,304	2	1.00E+05
Suffolk	iHS	4	95900000	9.6e+07	2,168	2	1.00E+05
Suffolk	iHS	4	99800000	99900000	2,132	2	1.00E+05
Suffolk	iHS	5	26100000	26200000	2,382	2	1.00E+05
Suffolk	iHS	6	38900000	3.9e+07	2,082	2	1.00E+05
Suffolk	iHS	6	9.7e+07	97100000	2,071	2	1.00E+05
Suffolk	iHS	6	98800000	98900000	2,126	2	1.00E+05
Suffolk	iHS	6	102800000	102900000	2,574	3	1.00E+05
Suffolk	iHS	6	105600000	105700000	2,088	2	1.00E+05
Suffolk	iHS	7	49800000	49900000	2,279	2	1.00E+05
Suffolk	iHS	8	37100000	37200000	2,119	2	1.00E+05
Suffolk	iHS	9	42100000	42200000	2,141	2	1.00E+05
Suffolk	iHS	10	12100000	12200000	2,099	2	1.00E+05
Suffolk	iHS	11	18800000	18900000	2,297	2	1.00E+05
Suffolk	iHS	12	5.2e+07	52100000	2,076	2	1.00E+05
Suffolk	iHS	13	51200000	51300000	2,106	2	1.00E+05
Suffolk	iHS	13	53500000	53600000	2,168	2	1.00E+05
Suffolk	iHS	15	58500000	58600000	2,122	2	1.00E+05
Suffolk	iHS	15	59800000	59900000	2,364	2	1.00E+05
Suffolk	iHS	16	45900000	4.6e+07	2,064	2	1.00E+05
Suffolk	iHS	17	1.6e+07	16100000	2,181	2	1.00E+05
Suffolk	iHS	18	17500000	17600000	2,309	2	1.00E+05
Suffolk	iHS	18	54300000	54400000	2,056	2	1.00E+05
Suffolk	iHS	21	1.6e+07	16100000	2,207	2	1.00E+05
Suffolk	iHS	22	13600000	13700000	2.39	2	1.00E+05
Suffolk	iHS	26	18600000	18700000	2,613	2	1.00E+05
Texel	iHS	2	202200000	202400000	2.381, 2.473	2, 2	2.00E+05
Texel	iHS	2	204800000	2.05e+08	2.642, 3.028	2, 2	2.00E+05
Texel	iHS	3	130600000	130800000	2.657, 2.488	2, 3	2.00E+05
Texel	iHS	1	131900000	1.32e+08	2,883	2	1.00E+05
Texel	iHS	1	134100000	134200000	2.31	2	1.00E+05
Texel	iHS	1	136100000	136200000	2,423	3	1.00E+05
Texel	iHS	1	182400000	182500000	2,328	2	1.00E+05
Texel	iHS	1	199400000	199500000	2,303	2	1.00E+05
Texel	iHS	1	208700000	208800000	2,412	2	1.00E+05
Texel	iHS	1	2.09e+08	209100000	2,505	2	1.00E+05
Texel	iHS	1	210800000	210900000	2,347	3	1.00E+05
Texel	iHS	1	212100000	212200000	2,616	3	1.00E+05
Texel	iHS	1	213100000	213200000	3,033	2	1.00E+05
Texel	iHS	1	213900000	2.14e+08	2.28	3	1.00E+05
Texel	iHS	1	214400000	214500000	2,634	3	1.00E+05

Texel	iHS	1	214900000	2.15e+08	2,623	2	1.00E+05
Texel	iHS	1	215600000	215700000	2,303	2	1.00E+05
Texel	iHS	1	219100000	219200000	2,722	2	1.00E+05
Texel	iHS	1	220800000	220900000	2,931	2	1.00E+05
Texel	iHS	1	221800000	221900000	2,682	2	1.00E+05
Texel	iHS	1	222200000	222300000	2,943	2	1.00E+05
Texel	iHS	1	223300000	223400000	2,672	2	1.00E+05
Texel	iHS	1	223500000	223600000	2,367	2	1.00E+05
Texel	iHS	1	227700000	227800000	2,681	2	1.00E+05
Texel	iHS	2	101900000	1.02e+08	2,465	3	1.00E+05
Texel	iHS	2	125800000	125900000	2,366	2	1.00E+05
Texel	iHS	2	128400000	128500000	2,536	2	1.00E+05
Texel	iHS	2	128700000	128800000	2,313	3	1.00E+05
Texel	iHS	2	129100000	129200000	2,599	2	1.00E+05
Texel	iHS	2	129800000	129900000	2,526	2	1.00E+05
Texel	iHS	2	155700000	155800000	2.29	2	1.00E+05
Texel	iHS	2	185300000	185400000	2,339	2	1.00E+05
Texel	iHS	2	188500000	188600000	2,639	2	1.00E+05
Texel	iHS	2	189900000	1.9e+08	3,012	2	1.00E+05
Texel	iHS	2	190400000	190500000	2,281	2	1.00E+05
Texel	iHS	2	190600000	190700000	2,853	4	1.00E+05
Texel	iHS	2	191800000	191900000	2,353	2	1.00E+05
Texel	iHS	2	192300000	192400000	2,915	2	1.00E+05
Texel	iHS	2	193500000	193600000	3,078	2	1.00E+05
Texel	iHS	2	198100000	198200000	2,733	2	1.00E+05
Texel	iHS	2	198400000	198500000	2,558	2	1.00E+05
Texel	iHS	2	199100000	199200000	2,646	2	1.00E+05
Texel	iHS	2	199600000	199700000	2,368	2	1.00E+05
Texel	iHS	2	200400000	200500000	3,143	2	1.00E+05
Texel	iHS	2	200900000	2.01e+08	2,322	2	1.00E+05
Texel	iHS	2	201900000	2.02e+08	2,754	2	1.00E+05
Texel	iHS	2	202600000	202700000	2,381	2	1.00E+05
Texel	iHS	2	205700000	205800000	2,368	2	1.00E+05
Texel	iHS	2	205900000	2.06e+08	2,939	2	1.00E+05
Texel	iHS	2	218400000	218500000	2,834	3	1.00E+05
Texel	iHS	3	108900000	1.09e+08	2,662	2	1.00E+05
Texel	iHS	3	1.27e+08	127100000	3,025	2	1.00E+05
Texel	iHS	3	127500000	127600000	2,313	2	1.00E+05
Texel	iHS	3	132100000	132200000	2,516	2	1.00E+05
Texel	iHS	3	132400000	132500000	2,802	2	1.00E+05
Texel	iHS	3	133700000	133800000	2,331	2	1.00E+05

Texel	iHS	3	163600000	163700000	2,313	2	1.00E+05
Texel	iHS	3	2.06e+08	206100000	2,799	3	1.00E+05
Texel	iHS	3	206600000	206700000	2,673	2	1.00E+05
Texel	iHS	3	207800000	207900000	2,472	2	1.00E+05
Texel	iHS	3	2.08e+08	208100000	2,853	3	1.00E+05
Texel	iHS	3	209200000	209300000	2,535	2	1.00E+05
Texel	iHS	3	2.13e+08	213100000	2,947	2	1.00E+05
Texel	iHS	3	213500000	213600000	2,405	3	1.00E+05
Texel	iHS	3	214600000	214700000	3,248	2	1.00E+05
Texel	iHS	3	214900000	2.15e+08	2,603	2	1.00E+05
Texel	iHS	3	215200000	215300000	3,499	2	1.00E+05
Texel	iHS	4	104800000	104900000	2,699	2	1.00E+05
Texel	iHS	4	106800000	106900000	2,289	2	1.00E+05
Texel	iHS	6	104600000	104700000	2,956	3	1.00E+05
Texel	iHS	6	106100000	106200000	2,392	2	1.00E+05
Texel	iHS	6	108700000	108800000	2,721	2	1.00E+05
Texel	iHS	7	78300000	78400000	2,687	2	1.00E+05
Texel	iHS	7	100200000	100300000	2,778	2	1.00E+05
Texel	iHS	8	49200000	49300000	2,305	3	1.00E+05
Texel	iHS	8	86900000	8.7e+07	2,536	2	1.00E+05
Texel	iHS	9	74500000	74600000	2.34	2	1.00E+05
Texel	iHS	10	69700000	69800000	2,745	2	1.00E+05
Texel	iHS	10	7.1e+07	71100000	2,451	2	1.00E+05
Vendeen	iHS	1	19700000	19800000	1,979	3	1.00E+05
Vendeen	iHS	1	2.5e+07	25100000	1,977	2	1.00E+05
Vendeen	iHS	1	103400000	103500000	1,972	2	1.00E+05
Vendeen	iHS	1	148100000	148200000	2,053	2	1.00E+05
Vendeen	iHS	1	148700000	148800000	2,084	2	1.00E+05
Vendeen	iHS	1	174200000	174300000	2,197	2	1.00E+05
Vendeen	iHS	1	175100000	175200000	1,987	2	1.00E+05
Vendeen	iHS	1	178500000	178600000	2,107	2	1.00E+05
Vendeen	iHS	1	185400000	185500000	1,988	2	1.00E+05
Vendeen	iHS	1	1.98e+08	198100000	2,178	2	1.00E+05
Vendeen	iHS	1	212500000	212600000	2,002	2	1.00E+05
Vendeen	iHS	2	21600000	21700000	2,286	2	1.00E+05
Vendeen	iHS	2	128700000	128800000	2,027	3	1.00E+05
Vendeen	iHS	2	1.66e+08	166100000	2.26	2	1.00E+05
Vendeen	iHS	2	174500000	174600000	2,104	2	1.00E+05
Vendeen	iHS	2	183600000	183700000	2,204	2	1.00E+05
Vendeen	iHS	2	220100000	220200000	2,281	2	1.00E+05
Vendeen	iHS	3	22400000	22500000	2,053	2	1.00E+05

Vendeen	iHS	3	23300000	23400000	1,979	2	1.00E+05
Vendeen	iHS	3	27100000	27200000	2.15	2	1.00E+05
Vendeen	iHS	3	27400000	27500000	2,392	2	1.00E+05
Vendeen	iHS	3	79700000	79800000	2,018	2	1.00E+05
Vendeen	iHS	3	116100000	116200000	2,025	2	1.00E+05
Vendeen	iHS	3	139300000	139400000	2,085	2	1.00E+05
Vendeen	iHS	3	167300000	167400000	2,013	2	1.00E+05
Vendeen	iHS	3	170200000	170300000	2,839	2	1.00E+05
Vendeen	iHS	4	39300000	39400000	2,058	2	1.00E+05
Vendeen	iHS	6	18700000	18800000	2,005	3	1.00E+05
Vendeen	iHS	6	65200000	65300000	2,086	2	1.00E+05
Vendeen	iHS	6	86400000	86500000	2,083	3	1.00E+05
Vendeen	iHS	6	8.7e+07	87100000	2,047	2	1.00E+05
Vendeen	iHS	6	95600000	95700000	2.16	2	1.00E+05
Vendeen	iHS	7	12100000	12200000	1,966	2	1.00E+05
Vendeen	iHS	7	14600000	14700000	2,083	2	1.00E+05
Vendeen	iHS	7	18900000	1.9e+07	2.05	2	1.00E+05
Vendeen	iHS	7	40800000	40900000	2,105	3	1.00E+05
Vendeen	iHS	7	49900000	5.00E+07	2,154	2	1.00E+05
Vendeen	iHS	7	100100000	100200000	2,281	2	1.00E+05
Vendeen	iHS	8	15400000	15500000	2,043	2	1.00E+05
Vendeen	iHS	8	16100000	16200000	2,024	2	1.00E+05
Vendeen	iHS	8	38100000	38200000	2,018	2	1.00E+05
Vendeen	iHS	8	66600000	66700000	2,281	2	1.00E+05
Vendeen	iHS	9	10400000	10500000	1,987	3	1.00E+05
Vendeen	iHS	9	19100000	19200000	1,973	3	1.00E+05
Vendeen	iHS	9	19400000	19500000	2,077	3	1.00E+05
Vendeen	iHS	9	46400000	46500000	2.11	2	1.00E+05
Vendeen	iHS	10	11500000	11600000	1,999	2	1.00E+05
Vendeen	iHS	10	84600000	84700000	2,139	2	1.00E+05
Vendeen	iHS	12	19500000	19600000	1.98	2	1.00E+05
Vendeen	iHS	12	19900000	2.00E+07	2,172	2	1.00E+05
Vendeen	iHS	13	14900000	1.5e+07	1,989	2	1.00E+05
Vendeen	iHS	13	21800000	21900000	2,046	2	1.00E+05
Vendeen	iHS	13	22100000	22200000	2,226	2	1.00E+05
Vendeen	iHS	13	52600000	52700000	2	2	1.00E+05
Vendeen	iHS	14	21500000	21600000	1,975	4	1.00E+05
Vendeen	iHS	14	27200000	27300000	1,994	2	1.00E+05
Vendeen	iHS	14	27500000	27600000	2,266	2	1.00E+05
Vendeen	iHS	14	27900000	2.8e+07	2,011	2	1.00E+05
Vendeen	iHS	15	39500000	39600000	1,979	2	1.00E+05

Vendeen	iHS	16	14700000	14800000	1,994	2	1.00E+05
Vendeen	iHS	16	20600000	20700000	2,139	2	1.00E+05
Vendeen	iHS	17	1.2e+07	12100000	2,153	2	1.00E+05
Vendeen	iHS	17	16800000	16900000	2,026	2	1.00E+05
Vendeen	iHS	18	15400000	15500000	2,179	2	1.00E+05
Vendeen	iHS	18	17700000	17800000	1,969	2	1.00E+05
Vendeen	iHS	18	51700000	51800000	2,061	2	1.00E+05
Vendeen	iHS	20	13100000	13200000	1,993	2	1.00E+05
Vendeen	iHS	20	13800000	13900000	2,117	2	1.00E+05
Vendeen	iHS	21	21500000	21600000	2,233	2	1.00E+05
Vendeen	iHS	22	13400000	13500000	2.13	2	1.00E+05
Vendeen	iHS	23	13700000	13800000	1,967	2	1.00E+05
Vendeen	iHS	25	20100000	20200000	2,023	3	1.00E+05
Vendeen	iHS	26	20300000	20400000	2.13	2	1.00E+05
Belclare	Tajimas' D	2	129400000	129700000	-0.402, -0.576, -0.162	2, 3, 2	3.00E+05
Belclare	Tajimas' D	2	131500000	131700000	-0.539, -0.011	3, 2	2.00E+05
Belclare	Tajimas' D	1	15300000	15400000	-0.071	2	1.00E+05
Belclare	Tajimas' D	1	46300000	46400000	-0.535	2	1.00E+05
Belclare	Tajimas' D	1	59800000	59900000	-0.075	2	1.00E+05
Belclare	Tajimas' D	1	61200000	61300000	-0.376	2	1.00E+05
Belclare	Tajimas' D	1	71100000	71200000	-0.112	2	1.00E+05
Belclare	Tajimas' D	1	72300000	72400000	-0.169	2	1.00E+05
Belclare	Tajimas' D	1	89200000	89300000	-0.27	2	1.00E+05
Belclare	Tajimas' D	1	141100000	141200000	-0.385	2	1.00E+05
Belclare	Tajimas' D	1	176400000	176500000	-0.083	2	1.00E+05
Belclare	Tajimas' D	1	194600000	194700000	-0.555	2	1.00E+05
Belclare	Tajimas' D	1	204900000	2.05e+08	-0.353	2	1.00E+05
Belclare	Tajimas' D	1	278500000	278600000	-0.225	2	1.00E+05
Belclare	Tajimas' D	2	9500000	9600000	-0.297	2	1.00E+05
Belclare	Tajimas' D	2	19400000	19500000	-0.186	3	1.00E+05
Belclare	Tajimas' D	2	21100000	21200000	-0.243	2	1.00E+05
Belclare	Tajimas' D	2	22100000	22200000	-0.065	2	1.00E+05
Belclare	Tajimas' D	2	27800000	27900000	-0.199	2	1.00E+05
Belclare	Tajimas' D	2	91300000	91400000	-0.021	2	1.00E+05
Belclare	Tajimas' D	2	115000000	115100000	-0.482	2	1.00E+05
Belclare	Tajimas' D	2	116400000	116500000	-0.454	3	1.00E+05
Belclare	Tajimas' D	2	116600000	116700000	-0.153	3	1.00E+05
Belclare	Tajimas' D	2	116900000	1.17e+08	-0.168	2	1.00E+05
Belclare	Tajimas' D	2	117600000	117700000	-0.59	2	1.00E+05
Belclare	Tajimas' D	2	119500000	119600000	-0.203	2	1.00E+05
Belclare	Tajimas' D	2	122400000	122500000	-0.171	2	1.00E+05

Belclare	Tajimas' D	2	123300000	123400000	-0.66	2	1.00E+05
Belclare	Tajimas' D	2	125900000	1.26e+08	-0.301	2	1.00E+05
Belclare	Tajimas' D	2	129200000	129300000	-0.085	2	1.00E+05
Belclare	Tajimas' D	2	131200000	131300000	-0.586	2	1.00E+05
Belclare	Tajimas' D	2	140700000	140800000	-0.129	2	1.00E+05
Belclare	Tajimas' D	2	141100000	141200000	-0.199	2	1.00E+05
Belclare	Tajimas' D	2	173000000	173100000	-0.286	2	1.00E+05
Belclare	Tajimas' D	2	205900000	2.06e+08	-0.014	2	1.00E+05
Belclare	Tajimas' D	2	213500000	213600000	-0.241	2	1.00E+05
Belclare	Tajimas' D	2	222300000	222400000	-0.515	2	1.00E+05
Belclare	Tajimas' D	2	244400000	244500000	-0.038	2	1.00E+05
Belclare	Tajimas' D	2	247200000	247300000	-0.109	2	1.00E+05
Belclare	Tajimas' D	2	253400000	253500000	-0.648	2	1.00E+05
Belclare	Tajimas' D	2	256500000	256600000	-0.583	2	1.00E+05
Belclare	Tajimas' D	3	25700000	25800000	-0.045	2	1.00E+05
Belclare	Tajimas' D	3	34400000	34500000	-0.468	2	1.00E+05
Belclare	Tajimas' D	3	46300000	46400000	-0.115	2	1.00E+05
Belclare	Tajimas' D	3	47300000	47400000	-0.289	2	1.00E+05
Belclare	Tajimas' D	3	77400000	77500000	-0.25	3	1.00E+05
Belclare	Tajimas' D	3	87400000	87500000	-0.195	2	1.00E+05
Belclare	Tajimas' D	3	90400000	90500000	-0.274	2	1.00E+05
Belclare	Tajimas' D	3	108600000	108700000	-0.082	2	1.00E+05
Belclare	Tajimas' D	3	114000000	114100000	-0.227	2	1.00E+05
Belclare	Tajimas' D	3	124300000	124400000	-0.045	2	1.00E+05
Belclare	Tajimas' D	3	198500000	198600000	-0.771	2	1.00E+05
Belclare	Tajimas' D	3	205300000	205400000	-0.043	2	1.00E+05
Belclare	Tajimas' D	3	227100000	227200000	-0.536	2	1.00E+05
Belclare	Tajimas' D	3	233000000	233100000	-0.328	2	1.00E+05
Belclare	Tajimas' D	4	900000	1.00E+06	-0.764	2	1.00E+05
Belclare	Tajimas' D	4	2400000	2500000	-0.218	2	1.00E+05
Belclare	Tajimas' D	4	22200000	22300000	-0.039	2	1.00E+05
Belclare	Tajimas' D	4	29200000	29300000	-0.351	3	1.00E+05
Belclare	Tajimas' D	4	39800000	39900000	-0.097	2	1.00E+05
Belclare	Tajimas' D	4	41100000	41200000	-0.389	2	1.00E+05
Belclare	Tajimas' D	4	88400000	88500000	-0.112	2	1.00E+05
Belclare	Tajimas' D	5	2400000	2500000	-0.161	2	1.00E+05
Belclare	Tajimas' D	5	2600000	2700000	-0.092	2	1.00E+05
Belclare	Tajimas' D	5	13500000	13600000	-0.689	2	1.00E+05
Belclare	Tajimas' D	5	56800000	56900000	-0.601	2	1.00E+05
Belclare	Tajimas' D	5	57700000	57800000	-0.525	2	1.00E+05
Belclare	Tajimas' D	5	64600000	64700000	-0.04	2	1.00E+05

Belclare	Tajimas' D	5	71600000	71700000	-0.317	2	1.00E+05
Belclare	Tajimas' D	5	74700000	74800000	-0.52	2	1.00E+05
Belclare	Tajimas' D	5	90000000	90100000	-0.094	2	1.00E+05
Belclare	Tajimas' D	6	92900000	9.3e+07	-0.168	2	1.00E+05
Belclare	Tajimas' D	7	12600000	12700000	-0.274	3	1.00E+05
Belclare	Tajimas' D	7	20800000	20900000	-0.275	2	1.00E+05
Belclare	Tajimas' D	7	48000000	48100000	-0.252	2	1.00E+05
Belclare	Tajimas' D	7	76400000	76500000	-0.406	2	1.00E+05
Belclare	Tajimas' D	7	96000000	96100000	-0.666	2	1.00E+05
Belclare	Tajimas' D	8	4000000	4100000	-0.313	2	1.00E+05
Belclare	Tajimas' D	8	37100000	37200000	-0.494	2	1.00E+05
Belclare	Tajimas' D	8	68400000	68500000	-0.25	2	1.00E+05
Belclare	Tajimas' D	8	68900000	6.9e+07	-0.569	2	1.00E+05
Belclare	Tajimas' D	8	73200000	73300000	-0.163	2	1.00E+05
Belclare	Tajimas' D	8	77600000	77700000	-0.208	3	1.00E+05
Belclare	Tajimas' D	8	84700000	84800000	-0.197	2	1.00E+05
Belclare	Tajimas' D	8	86400000	86500000	-0.269	4	1.00E+05
Belclare	Tajimas' D	8	86600000	86700000	-0.119	2	1.00E+05
Belclare	Tajimas' D	9	60400000	60500000	-0.522	2	1.00E+05
Belclare	Tajimas' D	9	75000000	75100000	-0.216	3	1.00E+05
Belclare	Tajimas' D	9	78600000	78700000	-0.068	3	1.00E+05
Belclare	Tajimas' D	10	6700000	6800000	-0.315	2	1.00E+05
Belclare	Tajimas' D	10	7400000	7500000	-0.692	2	1.00E+05
Belclare	Tajimas' D	10	32300000	32400000	-0.275	2	1.00E+05
Belclare	Tajimas' D	10	43100000	43200000	-0.011	3	1.00E+05
Belclare	Tajimas' D	10	46700000	46800000	-0.134	3	1.00E+05
Belclare	Tajimas' D	10	52700000	52800000	-0.253	2	1.00E+05
Belclare	Tajimas' D	10	57600000	57700000	-0.405	2	1.00E+05
Belclare	Tajimas' D	10	68600000	68700000	-0.281	2	1.00E+05
Belclare	Tajimas' D	11	27400000	27500000	-0.107	2	1.00E+05
Belclare	Tajimas' D	12	35500000	35600000	-0.239	2	1.00E+05
Belclare	Tajimas' D	12	41700000	41800000	-0.137	2	1.00E+05
Belclare	Tajimas' D	12	71300000	71400000	-0.096	3	1.00E+05
Belclare	Tajimas' D	12	81700000	81800000	-0.439	2	1.00E+05
Belclare	Tajimas' D	13	9200000	9300000	-0.025	2	1.00E+05
Belclare	Tajimas' D	13	43400000	43500000	-0.646	2	1.00E+05
Belclare	Tajimas' D	13	49200000	49300000	-0.777	2	1.00E+05
Belclare	Tajimas' D	13	53500000	53600000	-0.137	2	1.00E+05
Belclare	Tajimas' D	13	87400000	87500000	-0.184	2	1.00E+05
Belclare	Tajimas' D	14	48700000	48800000	-0.248	2	1.00E+05
Belclare	Tajimas' D	15	1500000	1600000	-0.373	2	1.00E+05

Belclare	Tajimas' D	15	26600000	26700000	-0.066	2	1.00E+05
Belclare	Tajimas' D	15	72200000	72300000	-0.292	2	1.00E+05
Belclare	Tajimas' D	16	2300000	2400000	-0.146	2	1.00E+05
Belclare	Tajimas' D	16	36600000	36700000	-0.48	2	1.00E+05
Belclare	Tajimas' D	16	54000000	54100000	-0.123	2	1.00E+05
Belclare	Tajimas' D	16	63500000	63600000	-0.334	2	1.00E+05
Belclare	Tajimas' D	16	66700000	66800000	-0.233	2	1.00E+05
Belclare	Tajimas' D	16	74300000	74400000	-0.264	2	1.00E+05
Belclare	Tajimas' D	17	8300000	8400000	-0.587	2	1.00E+05
Belclare	Tajimas' D	17	16100000	16200000	-0.581	2	1.00E+05
Belclare	Tajimas' D	17	17100000	17200000	-0.16	2	1.00E+05
Belclare	Tajimas' D	18	3200000	3300000	-0.427	2	1.00E+05
Belclare	Tajimas' D	18	42200000	42300000	-0.379	2	1.00E+05
Belclare	Tajimas' D	18	46300000	46400000	-0.456	2	1.00E+05
Belclare	Tajimas' D	18	59500000	59600000	-0.027	2	1.00E+05
Belclare	Tajimas' D	19	8000000	8100000	-0.4	2	1.00E+05
Belclare	Tajimas' D	19	46100000	46200000	-0.181	3	1.00E+05
Belclare	Tajimas' D	19	47300000	47400000	-0.491	2	1.00E+05
Belclare	Tajimas' D	20	24400000	24500000	-0.203	2	1.00E+05
Belclare	Tajimas' D	21	26600000	26700000	-0.03	2	1.00E+05
Belclare	Tajimas' D	21	35200000	35300000	-0.339	2	1.00E+05
Belclare	Tajimas' D	22	13400000	13500000	-0.429	2	1.00E+05
Belclare	Tajimas' D	22	29700000	29800000	-0.121	2	1.00E+05
Belclare	Tajimas' D	23	66600000	66700000	-0.09	2	1.00E+05
Belclare	Tajimas' D	24	6500000	6600000	-0.07	2	1.00E+05
Belclare	Tajimas' D	25	14300000	14400000	-0.431	2	1.00E+05
Belclare	Tajimas' D	25	20700000	20800000	-0.195	2	1.00E+05
Belclare	Tajimas' D	25	30000000	30100000	-0.498	3	1.00E+05
Belclare	Tajimas' D	25	30600000	30700000	-0.742	2	1.00E+05
Belclare	Tajimas' D	26	13200000	13300000	-0.509	2	1.00E+05
Belclare	Tajimas' D	26	38600000	38700000	-0.065	2	1.00E+05
Charollais	Tajimas' D	1	142200000	142400000	-0.494, -0.55	2, 2	2.00E+05
Charollais	Tajimas' D	8	33600000	33800000	-0.093, -0.278	2, 2	2.00E+05
Charollais	Tajimas' D	1	38700000	38800000	-0.098	2	1.00E+05
Charollais	Tajimas' D	1	151500000	151600000	-0.016	2	1.00E+05
Charollais	Tajimas' D	1	166400000	166500000	-0.161	2	1.00E+05
Charollais	Tajimas' D	1	185400000	185500000	-0.584	2	1.00E+05
Charollais	Tajimas' D	1	194600000	194700000	-0.587	2	1.00E+05
Charollais	Tajimas' D	1	221500000	221600000	-0.376	2	1.00E+05
Charollais	Tajimas' D	1	256300000	256400000	-0.38	2	1.00E+05
Charollais	Tajimas' D	1	257200000	257300000	-0.316	3	1.00E+05

Charollais Tajimas' D	1	259500000	259600000	-0.12	3	1.00E+05
Charollais Tajimas' D	1	261100000	261200000	-0.574	2	1.00E+05
Charollais Tajimas' D	1	261300000	261400000	-0.365	2	1.00E+05
Charollais Tajimas' D	1	262300000	262400000	-0.289	2	1.00E+05
Charollais Tajimas' D	1	269300000	269400000	-0.564	2	1.00E+05
Charollais Tajimas' D	2	29700000	29800000	-0.282	2	1.00E+05
Charollais Tajimas' D	2	67700000	67800000	-0.295	2	1.00E+05
Charollais Tajimas' D	2	91800000	91900000	-0.072	2	1.00E+05
Charollais Tajimas' D	2	99700000	99800000	-0.148	2	1.00E+05
Charollais Tajimas' D	2	122300000	122400000	-0.476	2	1.00E+05
Charollais Tajimas' D	2	134000000	134100000	-0.221	2	1.00E+05
Charollais Tajimas' D	2	152900000	1.53e+08	-0.222	2	1.00E+05
Charollais Tajimas' D	2	191000000	191100000	-0.436	2	1.00E+05
Charollais Tajimas' D	2	193100000	193200000	-0.352	2	1.00E+05
Charollais Tajimas' D	2	214700000	214800000	-0.13	2	1.00E+05
Charollais Tajimas' D	2	220200000	220300000	-0.105	2	1.00E+05
Charollais Tajimas' D	2	224300000	224400000	-0.576	2	1.00E+05
Charollais Tajimas' D	2	238700000	238800000	-0.054	2	1.00E+05
Charollais Tajimas' D	2	244400000	244500000	-0.317	2	1.00E+05
Charollais Tajimas' D	3	19700000	19800000	-0.417	2	1.00E+05
Charollais Tajimas' D	3	25300000	25400000	-0.467	2	1.00E+05
Charollais Tajimas' D	3	45000000	45100000	-0.028	2	1.00E+05
Charollais Tajimas' D	3	70000000	70100000	-0.087	2	1.00E+05
Charollais Tajimas' D	3	88800000	88900000	-0.225	2	1.00E+05
Charollais Tajimas' D	3	107500000	107600000	-0.376	2	1.00E+05
Charollais Tajimas' D	3	118700000	118800000	-0.257	2	1.00E+05
Charollais Tajimas' D	3	126900000	1.27e+08	-0.024	2	1.00E+05
Charollais Tajimas' D	3	132800000	132900000	-0.046	2	1.00E+05
Charollais Tajimas' D	3	146000000	146100000	-0.084	2	1.00E+05
Charollais Tajimas' D	3	158900000	1.59e+08	-0.051	2	1.00E+05
Charollais Tajimas' D	3	178600000	178700000	-0.092	2	1.00E+05
Charollais Tajimas' D	3	195300000	195400000	-0.598	2	1.00E+05
Charollais Tajimas' D	3	206300000	206400000	-0.625	2	1.00E+05
Charollais Tajimas' D	3	224600000	224700000	-0.043	2	1.00E+05
Charollais Tajimas' D	4	26400000	26500000	-0.104	2	1.00E+05
Charollais Tajimas' D	4	41100000	41200000	-0.358	2	1.00E+05
Charollais Tajimas' D	4	47300000	47400000	-0.185	3	1.00E+05
Charollais Tajimas' D	4	47500000	47600000	-0.262	2	1.00E+05
Charollais Tajimas' D	4	71400000	71500000	-0.201	2	1.00E+05
Charollais Tajimas' D	4	106400000	106500000	-0.616	2	1.00E+05
Charollais Tajimas' D	4	116700000	116800000	-0.188	2	1.00E+05

Charollais Tajimas' D	5	46200000	46300000	-0.176	2	1.00E+05
Charollais Tajimas' D	5	53600000	53700000	-0.392	2	1.00E+05
Charollais Tajimas' D	5	68100000	68200000	-0.444	3	1.00E+05
Charollais Tajimas' D	5	84400000	84500000	-0.162	2	1.00E+05
Charollais Tajimas' D	6	44300000	44400000	-0.274	3	1.00E+05
Charollais Tajimas' D	6	63400000	63500000	-0.212	2	1.00E+05
Charollais Tajimas' D	6	111600000	111700000	-0.214	2	1.00E+05
Charollais Tajimas' D	7	20800000	20900000	-0.628	2	1.00E+05
Charollais Tajimas' D	7	56000000	56100000	-0.439	2	1.00E+05
Charollais Tajimas' D	7	70000000	70100000	-0.011	2	1.00E+05
Charollais Tajimas' D	8	2200000	2300000	-0.177	2	1.00E+05
Charollais Tajimas' D	8	22500000	22600000	-0.014	2	1.00E+05
Charollais Tajimas' D	8	28400000	28500000	-0.395	2	1.00E+05
Charollais Tajimas' D	8	83600000	83700000	-0.617	2	1.00E+05
Charollais Tajimas' D	8	90800000	90900000	-0.234	2	1.00E+05
Charollais Tajimas' D	9	5200000	5300000	-0.326	2	1.00E+05
Charollais Tajimas' D	9	7900000	8.00E+06	-0.816	2	1.00E+05
Charollais Tajimas' D	9	11000000	11100000	-0.026	2	1.00E+05
Charollais Tajimas' D	9	12600000	12700000	-0.194	2	1.00E+05
Charollais Tajimas' D	9	26900000	2.7e+07	-0.514	2	1.00E+05
Charollais Tajimas' D	9	40400000	40500000	-0.192	2	1.00E+05
Charollais Tajimas' D	9	72500000	72600000	-0.36	2	1.00E+05
Charollais Tajimas' D	9	79900000	8.00E+07	-0.263	2	1.00E+05
Charollais Tajimas' D	10	3500000	3600000	-0.034	2	1.00E+05
Charollais Tajimas' D	10	57600000	57700000	-0.432	2	1.00E+05
Charollais Tajimas' D	11	13900000	1.4e+07	-0.16	2	1.00E+05
Charollais Tajimas' D	11	29200000	29300000	-0.594	2	1.00E+05
Charollais Tajimas' D	13	7700000	7800000	-0.175	3	1.00E+05
Charollais Tajimas' D	13	46500000	46600000	-0.503	2	1.00E+05
Charollais Tajimas' D	13	57400000	57500000	-0.261	3	1.00E+05
Charollais Tajimas' D	13	69600000	69700000	-0.07	2	1.00E+05
Charollais Tajimas' D	15	31900000	3.2e+07	-0.149	2	1.00E+05
Charollais Tajimas' D	15	45800000	45900000	-0.035	2	1.00E+05
Charollais Tajimas' D	15	49200000	49300000	-0.376	2	1.00E+05
Charollais Tajimas' D	15	65300000	65400000	-0.097	3	1.00E+05
Charollais Tajimas' D	16	33000000	33100000	-0.757	2	1.00E+05
Charollais Tajimas' D	16	36600000	36700000	-0.735	2	1.00E+05
Charollais Tajimas' D	16	42300000	42400000	-0.189	2	1.00E+05
Charollais Tajimas' D	16	52000000	52100000	-0.702	2	1.00E+05
Charollais Tajimas' D	16	56100000	56200000	-0.058	2	1.00E+05
Charollais Tajimas' D	16	61200000	61300000	-0.181	2	1.00E+05

Charollais	Tajimas' D	16	71400000	71500000	-0.113	3	1.00E+05
Charollais	Tajimas' D	17	30300000	30400000	-0.196	2	1.00E+05
Charollais	Tajimas' D	17	67200000	67300000	-0.04	2	1.00E+05
Charollais	Tajimas' D	18	9900000	1.00E+07	-0.455	2	1.00E+05
Charollais	Tajimas' D	19	1800000	1900000	-0.518	2	1.00E+05
Charollais	Tajimas' D	19	39100000	39200000	-0.258	2	1.00E+05
Charollais	Tajimas' D	19	45000000	45100000	-0.506	2	1.00E+05
Charollais	Tajimas' D	21	6500000	6600000	-0.212	2	1.00E+05
Charollais	Tajimas' D	21	26600000	26700000	-0.523	2	1.00E+05
Charollais	Tajimas' D	22	4400000	4500000	-0.187	3	1.00E+05
Charollais	Tajimas' D	23	16900000	1.7e+07	-0.099	2	1.00E+05
Charollais	Tajimas' D	23	23800000	23900000	-0.076	2	1.00E+05
Charollais	Tajimas' D	23	36800000	36900000	-0.027	3	1.00E+05
Charollais	Tajimas' D	24	18800000	18900000	-0.009	2	1.00E+05
Charollais	Tajimas' D	25	14100000	14200000	-0.346	2	1.00E+05
Charollais	Tajimas' D	25	15500000	15600000	-0.135	2	1.00E+05
Charollais	Tajimas' D	25	31000000	31100000	-0.178	2	1.00E+05
Charollais	Tajimas' D	26	11500000	11600000	-0.291	2	1.00E+05
Suffolk	Tajimas' D	2	211600000	211800000	-0.084, -0.167	2, 2	2.00E+05
Suffolk	Tajimas' D	4	96100000	96300000	-0.382, -0.161	2, 2	2.00E+05
Suffolk	Tajimas' D	13	25800000	2.6e+07	-0.13, -0.507	2, 2	2.00E+05
Suffolk	Tajimas' D	1	6900000	7.00E+06	-0.133	2	1.00E+05
Suffolk	Tajimas' D	1	15300000	15400000	-0.804	2	1.00E+05
Suffolk	Tajimas' D	1	27200000	27300000	-0.212	3	1.00E+05
Suffolk	Tajimas' D	1	37900000	3.8e+07	-0.205	2	1.00E+05
Suffolk	Tajimas' D	1	56200000	56300000	-0.32	2	1.00E+05
Suffolk	Tajimas' D	1	61900000	6.2e+07	-0.593	2	1.00E+05
Suffolk	Tajimas' D	1	85400000	85500000	-0.14	2	1.00E+05
Suffolk	Tajimas' D	1	92500000	92600000	-0.477	2	1.00E+05
Suffolk	Tajimas' D	1	103700000	103800000	-0.7	2	1.00E+05
Suffolk	Tajimas' D	1	117300000	117400000	-0.273	2	1.00E+05
Suffolk	Tajimas' D	1	133700000	133800000	-0.128	2	1.00E+05
Suffolk	Tajimas' D	1	134500000	134600000	-0.028	3	1.00E+05
Suffolk	Tajimas' D	1	143100000	143200000	-0.544	2	1.00E+05
Suffolk	Tajimas' D	1	148200000	148300000	-0.293	3	1.00E+05
Suffolk	Tajimas' D	1	152400000	152500000	-0.156	2	1.00E+05
Suffolk	Tajimas' D	1	155100000	155200000	-0.18	2	1.00E+05
Suffolk	Tajimas' D	1	155600000	155700000	-0.226	2	1.00E+05
Suffolk	Tajimas' D	1	164100000	164200000	-0.101	2	1.00E+05
Suffolk	Tajimas' D	1	169200000	169300000	-0.403	2	1.00E+05
Suffolk	Tajimas' D	1	174500000	174600000	-0.384	2	1.00E+05

Suffolk	Tajimas' D	1	177800000	177900000	-0.492	2	1.00E+05
Suffolk	Tajimas' D	1	182000000	182100000	-0.747	2	1.00E+05
Suffolk	Tajimas' D	1	184200000	184300000	-0.285	2	1.00E+05
Suffolk	Tajimas' D	1	190000000	190100000	-0.088	2	1.00E+05
Suffolk	Tajimas' D	1	191900000	1.92e+08	-0.033	2	1.00E+05
Suffolk	Tajimas' D	1	195600000	195700000	-0.261	2	1.00E+05
Suffolk	Tajimas' D	1	212500000	212600000	-0.214	2	1.00E+05
Suffolk	Tajimas' D	1	236600000	236700000	-0.259	2	1.00E+05
Suffolk	Tajimas' D	1	243400000	243500000	-0.459	2	1.00E+05
Suffolk	Tajimas' D	1	258700000	258800000	-0.176	3	1.00E+05
Suffolk	Tajimas' D	2	28200000	28300000	-0.429	3	1.00E+05
Suffolk	Tajimas' D	2	29700000	29800000	-0.76	2	1.00E+05
Suffolk	Tajimas' D	2	39100000	39200000	-0.547	2	1.00E+05
Suffolk	Tajimas' D	2	52600000	52700000	-0.717	2	1.00E+05
Suffolk	Tajimas' D	2	56800000	56900000	-0.673	3	1.00E+05
Suffolk	Tajimas' D	2	62400000	62500000	-0.112	2	1.00E+05
Suffolk	Tajimas' D	2	78300000	78400000	-0.264	2	1.00E+05
Suffolk	Tajimas' D	2	95900000	9.6e+07	-0.527	2	1.00E+05
Suffolk	Tajimas' D	2	113700000	113800000	-0.236	2	1.00E+05
Suffolk	Tajimas' D	2	121500000	121600000	-0.017	2	1.00E+05
Suffolk	Tajimas' D	2	122300000	122400000	-0.607	2	1.00E+05
Suffolk	Tajimas' D	2	142500000	142600000	-0.087	2	1.00E+05
Suffolk	Tajimas' D	2	160900000	1.61e+08	-0.167	2	1.00E+05
Suffolk	Tajimas' D	2	169100000	169200000	-0.573	2	1.00E+05
Suffolk	Tajimas' D	2	169400000	169500000	-0.09	2	1.00E+05
Suffolk	Tajimas' D	2	169700000	169800000	-0.042	2	1.00E+05
Suffolk	Tajimas' D	2	171700000	171800000	-0.108	2	1.00E+05
Suffolk	Tajimas' D	2	199100000	199200000	-0.495	2	1.00E+05
Suffolk	Tajimas' D	2	213500000	213600000	-0.67	2	1.00E+05
Suffolk	Tajimas' D	2	219600000	219700000	-0.18	2	1.00E+05
Suffolk	Tajimas' D	2	227800000	227900000	-0.287	2	1.00E+05
Suffolk	Tajimas' D	2	230700000	230800000	-0.133	2	1.00E+05
Suffolk	Tajimas' D	2	236300000	236400000	-0.158	3	1.00E+05
Suffolk	Tajimas' D	2	238700000	238800000	-0.608	2	1.00E+05
Suffolk	Tajimas' D	2	247200000	247300000	-0.399	2	1.00E+05
Suffolk	Tajimas' D	2	249700000	249800000	-0.25	2	1.00E+05
Suffolk	Tajimas' D	3	23500000	23600000	-0.265	2	1.00E+05
Suffolk	Tajimas' D	3	91900000	9.2e+07	-0.376	2	1.00E+05
Suffolk	Tajimas' D	3	118800000	118900000	-0.794	2	1.00E+05
Suffolk	Tajimas' D	3	134800000	134900000	-0.097	3	1.00E+05
Suffolk	Tajimas' D	3	137900000	1.38e+08	-0.036	2	1.00E+05

Suffolk	Tajimas' D	3	154900000	1.55e+08	-0.133	2	1.00E+05
Suffolk	Tajimas' D	3	165000000	165100000	-0.636	2	1.00E+05
Suffolk	Tajimas' D	3	174000000	174100000	-0.241	2	1.00E+05
Suffolk	Tajimas' D	3	174800000	174900000	-0.249	2	1.00E+05
Suffolk	Tajimas' D	3	175400000	175500000	-0.505	2	1.00E+05
Suffolk	Tajimas' D	3	186100000	186200000	-0.395	2	1.00E+05
Suffolk	Tajimas' D	3	189900000	1.9e+08	-0.525	2	1.00E+05
Suffolk	Tajimas' D	3	197700000	197800000	-0.693	2	1.00E+05
Suffolk	Tajimas' D	4	21800000	21900000	-0.693	2	1.00E+05
Suffolk	Tajimas' D	4	23300000	23400000	-0.709	2	1.00E+05
Suffolk	Tajimas' D	4	26000000	26100000	-0.787	2	1.00E+05
Suffolk	Tajimas' D	4	29000000	29100000	-0.352	2	1.00E+05
Suffolk	Tajimas' D	4	32800000	32900000	-0.668	2	1.00E+05
Suffolk	Tajimas' D	4	37400000	37500000	-0.492	2	1.00E+05
Suffolk	Tajimas' D	4	51600000	51700000	-0.086	2	1.00E+05
Suffolk	Tajimas' D	4	52500000	52600000	-0.085	4	1.00E+05
Suffolk	Tajimas' D	4	103300000	103400000	-0.117	2	1.00E+05
Suffolk	Tajimas' D	4	117000000	117100000	-0.18	2	1.00E+05
Suffolk	Tajimas' D	5	25000000	25100000	-0.133	2	1.00E+05
Suffolk	Tajimas' D	5	56300000	56400000	-0.746	3	1.00E+05
Suffolk	Tajimas' D	5	59900000	6.00E+07	-0.408	2	1.00E+05
Suffolk	Tajimas' D	5	99200000	99300000	-0.066	2	1.00E+05
Suffolk	Tajimas' D	5	99500000	99600000	-0.223	3	1.00E+05
Suffolk	Tajimas' D	5	109800000	109900000	-0.203	2	1.00E+05
Suffolk	Tajimas' D	5	114700000	114800000	-0.103	2	1.00E+05
Suffolk	Tajimas' D	6	12400000	12500000	-0.821	2	1.00E+05
Suffolk	Tajimas' D	6	28400000	28500000	-0.237	2	1.00E+05
Suffolk	Tajimas' D	6	37300000	37400000	-0.618	2	1.00E+05
Suffolk	Tajimas' D	6	48100000	48200000	-0.084	2	1.00E+05
Suffolk	Tajimas' D	6	64500000	64600000	-0.627	2	1.00E+05
Suffolk	Tajimas' D	6	87200000	87300000	-0.266	2	1.00E+05
Suffolk	Tajimas' D	6	104100000	104200000	-0.018	2	1.00E+05
Suffolk	Tajimas' D	7	1800000	1900000	-0.277	2	1.00E+05
Suffolk	Tajimas' D	7	26700000	26800000	-0.456	2	1.00E+05
Suffolk	Tajimas' D	7	32600000	32700000	-0.486	2	1.00E+05
Suffolk	Tajimas' D	7	36400000	36500000	-0.07	2	1.00E+05
Suffolk	Tajimas' D	7	44000000	44100000	-0.024	2	1.00E+05
Suffolk	Tajimas' D	7	66500000	66600000	-0.462	2	1.00E+05
Suffolk	Tajimas' D	7	102700000	102800000	-0.272	2	1.00E+05
Suffolk	Tajimas' D	8	3900000	4.00E+06	-0.154	2	1.00E+05
Suffolk	Tajimas' D	8	13400000	13500000	-0.025	2	1.00E+05

Suffolk	Tajimas' D	8	33700000	33800000	-0.111	2	1.00E+05
Suffolk	Tajimas' D	8	44200000	44300000	-0.453	2	1.00E+05
Suffolk	Tajimas' D	8	48300000	48400000	-0.324	2	1.00E+05
Suffolk	Tajimas' D	8	48500000	48600000	-0.132	2	1.00E+05
Suffolk	Tajimas' D	8	64700000	64800000	-0.08	2	1.00E+05
Suffolk	Tajimas' D	8	66600000	66700000	-0.606	2	1.00E+05
Suffolk	Tajimas' D	8	68700000	68800000	-0.136	2	1.00E+05
Suffolk	Tajimas' D	8	70300000	70400000	-0.135	2	1.00E+05
Suffolk	Tajimas' D	8	75600000	75700000	-0.684	2	1.00E+05
Suffolk	Tajimas' D	8	90800000	90900000	-0.434	2	1.00E+05
Suffolk	Tajimas' D	8	91300000	91400000	-0.43	2	1.00E+05
Suffolk	Tajimas' D	8	91600000	91700000	-0.093	2	1.00E+05
Suffolk	Tajimas' D	8	96400000	96500000	-0.07	2	1.00E+05
Suffolk	Tajimas' D	9	25100000	25200000	-0.485	2	1.00E+05
Suffolk	Tajimas' D	9	30600000	30700000	-0.572	3	1.00E+05
Suffolk	Tajimas' D	9	32700000	32800000	-0.135	2	1.00E+05
Suffolk	Tajimas' D	9	39300000	39400000	-0.165	2	1.00E+05
Suffolk	Tajimas' D	9	49800000	49900000	-0.581	2	1.00E+05
Suffolk	Tajimas' D	9	55100000	55200000	-0.401	2	1.00E+05
Suffolk	Tajimas' D	9	64500000	64600000	-0.263	3	1.00E+05
Suffolk	Tajimas' D	9	66200000	66300000	-0.157	2	1.00E+05
Suffolk	Tajimas' D	9	77400000	77500000	-0.041	2	1.00E+05
Suffolk	Tajimas' D	9	88500000	88600000	-0.251	2	1.00E+05
Suffolk	Tajimas' D	9	93800000	93900000	-0.128	2	1.00E+05
Suffolk	Tajimas' D	10	2500000	2600000	-0.132	2	1.00E+05
Suffolk	Tajimas' D	10	9800000	9900000	-0.524	2	1.00E+05
Suffolk	Tajimas' D	10	26900000	2.7e+07	-0.246	2	1.00E+05
Suffolk	Tajimas' D	10	54000000	54100000	-0.198	2	1.00E+05
Suffolk	Tajimas' D	10	56000000	56100000	-0.274	2	1.00E+05
Suffolk	Tajimas' D	10	69700000	69800000	-0.159	2	1.00E+05
Suffolk	Tajimas' D	10	84300000	84400000	-0.227	2	1.00E+05
Suffolk	Tajimas' D	10	86700000	86800000	-0.236	2	1.00E+05
Suffolk	Tajimas' D	11	8000000	8100000	-0.235	2	1.00E+05
Suffolk	Tajimas' D	11	34400000	34500000	-0.562	3	1.00E+05
Suffolk	Tajimas' D	12	2800000	2900000	-0.491	2	1.00E+05
Suffolk	Tajimas' D	12	17500000	17600000	-0.139	2	1.00E+05
Suffolk	Tajimas' D	12	56900000	5.7e+07	-0.135	2	1.00E+05
Suffolk	Tajimas' D	12	61800000	61900000	-0.404	2	1.00E+05
Suffolk	Tajimas' D	12	69300000	69400000	-0.276	2	1.00E+05
Suffolk	Tajimas' D	12	69800000	69900000	-0.118	2	1.00E+05
Suffolk	Tajimas' D	13	21700000	21800000	-0.175	2	1.00E+05

Suffolk	Tajimas' D	13	21900000	2.2e+07	-0.432	2	1.00E+05
Suffolk	Tajimas' D	13	22400000	22500000	-0.03	2	1.00E+05
Suffolk	Tajimas' D	13	22700000	22800000	-0.161	2	1.00E+05
Suffolk	Tajimas' D	13	23600000	23700000	-0.656	3	1.00E+05
Suffolk	Tajimas' D	13	25600000	25700000	-0.106	2	1.00E+05
Suffolk	Tajimas' D	13	31800000	31900000	-0.034	2	1.00E+05
Suffolk	Tajimas' D	13	49200000	49300000	-0.511	2	1.00E+05
Suffolk	Tajimas' D	13	57400000	57500000	-0.034	3	1.00E+05
Suffolk	Tajimas' D	13	67400000	67500000	-0.166	2	1.00E+05
Suffolk	Tajimas' D	13	73400000	73500000	-0.78	2	1.00E+05
Suffolk	Tajimas' D	13	74000000	74100000	-0.101	2	1.00E+05
Suffolk	Tajimas' D	14	16700000	16800000	-0.889	3	1.00E+05
Suffolk	Tajimas' D	15	9300000	9400000	-0.47	2	1.00E+05
Suffolk	Tajimas' D	15	42300000	42400000	-0.807	2	1.00E+05
Suffolk	Tajimas' D	15	44500000	44600000	-0.114	2	1.00E+05
Suffolk	Tajimas' D	15	60600000	60700000	-0.501	2	1.00E+05
Suffolk	Tajimas' D	15	61700000	61800000	-0.519	2	1.00E+05
Suffolk	Tajimas' D	15	64500000	64600000	-0.693	2	1.00E+05
Suffolk	Tajimas' D	15	72000000	72100000	-0.69	2	1.00E+05
Suffolk	Tajimas' D	15	76800000	76900000	-0.136	2	1.00E+05
Suffolk	Tajimas' D	15	77000000	77100000	-0.23	2	1.00E+05
Suffolk	Tajimas' D	15	77800000	77900000	-0.347	2	1.00E+05
Suffolk	Tajimas' D	15	78500000	78600000	-0.025	2	1.00E+05
Suffolk	Tajimas' D	16	1200000	1300000	-0.169	2	1.00E+05
Suffolk	Tajimas' D	16	11200000	11300000	-0.074	2	1.00E+05
Suffolk	Tajimas' D	16	36400000	36500000	-0.52	3	1.00E+05
Suffolk	Tajimas' D	16	39800000	39900000	-0.446	2	1.00E+05
Suffolk	Tajimas' D	16	41600000	41700000	-0.475	2	1.00E+05
Suffolk	Tajimas' D	16	41900000	4.2e+07	-0.052	2	1.00E+05
Suffolk	Tajimas' D	16	42300000	42400000	-0.515	2	1.00E+05
Suffolk	Tajimas' D	16	43200000	43300000	-0.159	2	1.00E+05
Suffolk	Tajimas' D	16	50700000	50800000	-0.075	2	1.00E+05
Suffolk	Tajimas' D	16	51100000	51200000	-0.67	2	1.00E+05
Suffolk	Tajimas' D	16	56300000	56400000	-0.348	2	1.00E+05
Suffolk	Tajimas' D	16	67200000	67300000	-0.178	2	1.00E+05
Suffolk	Tajimas' D	17	8300000	8400000	-0.541	2	1.00E+05
Suffolk	Tajimas' D	17	17600000	17700000	-0.636	2	1.00E+05
Suffolk	Tajimas' D	17	31900000	3.2e+07	-0.288	3	1.00E+05
Suffolk	Tajimas' D	17	32900000	3.3e+07	-0.148	2	1.00E+05
Suffolk	Tajimas' D	17	34700000	34800000	-0.287	2	1.00E+05
Suffolk	Tajimas' D	17	35100000	35200000	-0.268	2	1.00E+05

Suffolk	Tajimas' D	17	35400000	35500000	-0.309	2	1.00E+05
Suffolk	Tajimas' D	17	39800000	39900000	-0.158	2	1.00E+05
Suffolk	Tajimas' D	17	40900000	4.1e+07	-0.362	2	1.00E+05
Suffolk	Tajimas' D	18	39100000	39200000	-0.499	3	1.00E+05
Suffolk	Tajimas' D	18	43500000	43600000	-0.27	2	1.00E+05
Suffolk	Tajimas' D	18	47400000	47500000	-0.523	2	1.00E+05
Suffolk	Tajimas' D	18	54600000	54700000	-0.367	2	1.00E+05
Suffolk	Tajimas' D	18	58600000	58700000	-0.695	2	1.00E+05
Suffolk	Tajimas' D	18	66200000	66300000	-0.744	2	1.00E+05
Suffolk	Tajimas' D	19	8500000	8600000	-0.072	2	1.00E+05
Suffolk	Tajimas' D	19	26700000	26800000	-0.654	2	1.00E+05
Suffolk	Tajimas' D	19	27000000	27100000	-0.14	2	1.00E+05
Suffolk	Tajimas' D	19	35700000	35800000	-0.094	2	1.00E+05
Suffolk	Tajimas' D	20	9400000	9500000	-0.423	2	1.00E+05
Suffolk	Tajimas' D	20	24400000	24500000	-0.365	3	1.00E+05
Suffolk	Tajimas' D	20	34500000	34600000	-0.373	2	1.00E+05
Suffolk	Tajimas' D	20	38500000	38600000	-0.118	2	1.00E+05
Suffolk	Tajimas' D	21	20300000	20400000	-0.065	2	1.00E+05
Suffolk	Tajimas' D	21	25000000	25100000	-0.604	2	1.00E+05
Suffolk	Tajimas' D	22	12800000	12900000	-0.06	3	1.00E+05
Suffolk	Tajimas' D	22	22800000	22900000	-0.205	2	1.00E+05
Suffolk	Tajimas' D	22	42900000	4.3e+07	-0.152	2	1.00E+05
Suffolk	Tajimas' D	23	27200000	27300000	-0.774	2	1.00E+05
Suffolk	Tajimas' D	23	37300000	37400000	-0.07	2	1.00E+05
Suffolk	Tajimas' D	24	7500000	7600000	-0.43	2	1.00E+05
Suffolk	Tajimas' D	25	10400000	10500000	-0.448	2	1.00E+05
Suffolk	Tajimas' D	25	30000000	30100000	-0.355	3	1.00E+05
Suffolk	Tajimas' D	25	37900000	3.8e+07	-0.032	3	1.00E+05
Suffolk	Tajimas' D	26	14900000	1.5e+07	-0.35	2	1.00E+05
Suffolk	Tajimas' D	26	17700000	17800000	-0.489	2	1.00E+05
Suffolk	Tajimas' D	26	19100000	19200000	-0.089	2	1.00E+05
Suffolk	Tajimas' D	26	27500000	27600000	-0.152	2	1.00E+05
Suffolk	Tajimas' D	26	47500000	47600000	-0.165	2	1.00E+05
Texel	Tajimas' D	2	127200000	127500000	-0.231, -0.701, -0.617	2, 3, 2	3.00E+05
Texel	Tajimas' D	2	129400000	129700000	-0.245, -0.163, -0.186	2, 2, 2	3.00E+05
Texel	Tajimas' D	1	67600000	67800000	-0.028, -0.614	3, 3	2.00E+05
Texel	Tajimas' D	2	131500000	131700000	-0.673, -0.01	2, 2	2.00E+05
Texel	Tajimas' D	25	19900000	20100000	-0.402, -0.405	2, 2	2.00E+05
Texel	Tajimas' D	1	40700000	40800000	-0.179	3	1.00E+05
Texel	Tajimas' D	1	41200000	41300000	-0.353	2	1.00E+05
Texel	Tajimas' D	1	46000000	46100000	-0.1	2	1.00E+05

Texel	Tajimas' D	1	46300000	46400000	-0.163	2	1.00E+05
Texel	Tajimas' D	1	53000000	53100000	-0.726	2	1.00E+05
Texel	Tajimas' D	1	75000000	75100000	-0.389	2	1.00E+05
Texel	Tajimas' D	1	95500000	95600000	-0.109	2	1.00E+05
Texel	Tajimas' D	1	97500000	97600000	-0.217	2	1.00E+05
Texel	Tajimas' D	1	106800000	106900000	-0.736	2	1.00E+05
Texel	Tajimas' D	1	177800000	177900000	-0.13	2	1.00E+05
Texel	Tajimas' D	1	181500000	181600000	-0.344	2	1.00E+05
Texel	Tajimas' D	1	194000000	194100000	-0.167	2	1.00E+05
Texel	Tajimas' D	1	194600000	194700000	-0.291	2	1.00E+05
Texel	Tajimas' D	1	195600000	195700000	-0.481	2	1.00E+05
Texel	Tajimas' D	1	198600000	198700000	-0.038	2	1.00E+05
Texel	Tajimas' D	1	219200000	219300000	-0.304	2	1.00E+05
Texel	Tajimas' D	1	250900000	2.51e+08	-0.191	2	1.00E+05
Texel	Tajimas' D	2	21100000	21200000	-0.098	2	1.00E+05
Texel	Tajimas' D	2	21400000	21500000	-0.666	2	1.00E+05
Texel	Tajimas' D	2	68400000	68500000	-0.586	2	1.00E+05
Texel	Tajimas' D	2	71400000	71500000	-0.606	2	1.00E+05
Texel	Tajimas' D	2	78000000	78100000	-0.196	2	1.00E+05
Texel	Tajimas' D	2	93300000	93400000	-0.246	2	1.00E+05
Texel	Tajimas' D	2	104300000	104400000	-0.256	2	1.00E+05
Texel	Tajimas' D	2	114100000	114200000	-0.265	2	1.00E+05
Texel	Tajimas' D	2	116900000	1.17e+08	-0.633	2	1.00E+05
Texel	Tajimas' D	2	117600000	117700000	-0.537	2	1.00E+05
Texel	Tajimas' D	2	126300000	126400000	-0.15	2	1.00E+05
Texel	Tajimas' D	2	126500000	126600000	-0.5	2	1.00E+05
Texel	Tajimas' D	2	127700000	127800000	-0.284	2	1.00E+05
Texel	Tajimas' D	2	128400000	128500000	-0.199	2	1.00E+05
Texel	Tajimas' D	2	129800000	129900000	-0.239	2	1.00E+05
Texel	Tajimas' D	2	130100000	130200000	-0.581	3	1.00E+05
Texel	Tajimas' D	2	141100000	141200000	-0.366	2	1.00E+05
Texel	Tajimas' D	2	178100000	178200000	-0.037	2	1.00E+05
Texel	Tajimas' D	2	191000000	191100000	-0.335	2	1.00E+05
Texel	Tajimas' D	2	248500000	248600000	-0.326	2	1.00E+05
Texel	Tajimas' D	3	23300000	23400000	-0.685	3	1.00E+05
Texel	Tajimas' D	3	37500000	37600000	-0.524	2	1.00E+05
Texel	Tajimas' D	3	63700000	63800000	-0.414	2	1.00E+05
Texel	Tajimas' D	3	72600000	72700000	-0.219	2	1.00E+05
Texel	Tajimas' D	3	77400000	77500000	-0.123	2	1.00E+05
Texel	Tajimas' D	3	78500000	78600000	-0.273	2	1.00E+05
Texel	Tajimas' D	3	81700000	81800000	-0.273	2	1.00E+05

Texel	Tajimas' D	3	86500000	86600000	-0.162	2	1.00E+05
Texel	Tajimas' D	3	90400000	90500000	-0.118	2	1.00E+05
Texel	Tajimas' D	3	134800000	134900000	-0.685	2	1.00E+05
Texel	Tajimas' D	3	156400000	156500000	-0.39	3	1.00E+05
Texel	Tajimas' D	3	159700000	159800000	-0.651	2	1.00E+05
Texel	Tajimas' D	3	163400000	163500000	-0.393	2	1.00E+05
Texel	Tajimas' D	3	211300000	211400000	-0.346	2	1.00E+05
Texel	Tajimas' D	3	213000000	213100000	-0.474	2	1.00E+05
Texel	Tajimas' D	3	227100000	227200000	-0.407	2	1.00E+05
Texel	Tajimas' D	4	600000	7.00E+05	-0.452	2	1.00E+05
Texel	Tajimas' D	4	2400000	2500000	-0.121	2	1.00E+05
Texel	Tajimas' D	4	26000000	26100000	-0.028	2	1.00E+05
Texel	Tajimas' D	4	29400000	29500000	-0.089	2	1.00E+05
Texel	Tajimas' D	4	30700000	30800000	-0.229	2	1.00E+05
Texel	Tajimas' D	4	41100000	41200000	-0.723	2	1.00E+05
Texel	Tajimas' D	4	52600000	52700000	-0.578	2	1.00E+05
Texel	Tajimas' D	4	62400000	62500000	-0.619	2	1.00E+05
Texel	Tajimas' D	4	78600000	78700000	-0.589	2	1.00E+05
Texel	Tajimas' D	4	80100000	80200000	-0.404	2	1.00E+05
Texel	Tajimas' D	4	80800000	80900000	-0.3	2	1.00E+05
Texel	Tajimas' D	4	96000000	96100000	-0.146	2	1.00E+05
Texel	Tajimas' D	5	65300000	65400000	-0.267	2	1.00E+05
Texel	Tajimas' D	5	74700000	74800000	-0.591	2	1.00E+05
Texel	Tajimas' D	5	86400000	86500000	-0.338	2	1.00E+05
Texel	Tajimas' D	6	22300000	22400000	-0.145	2	1.00E+05
Texel	Tajimas' D	6	64500000	64600000	-0.105	2	1.00E+05
Texel	Tajimas' D	6	78700000	78800000	-0.568	2	1.00E+05
Texel	Tajimas' D	6	120500000	120600000	-0.14	2	1.00E+05
Texel	Tajimas' D	7	12600000	12700000	-0.595	2	1.00E+05
Texel	Tajimas' D	7	20800000	20900000	-0.341	2	1.00E+05
Texel	Tajimas' D	7	42200000	42300000	-0.214	3	1.00E+05
Texel	Tajimas' D	7	69600000	69700000	-0.169	3	1.00E+05
Texel	Tajimas' D	7	97800000	97900000	-0.027	3	1.00E+05
Texel	Tajimas' D	8	61500000	61600000	-0.441	2	1.00E+05
Texel	Tajimas' D	8	67600000	67700000	-0.184	2	1.00E+05
Texel	Tajimas' D	8	73200000	73300000	-0.258	2	1.00E+05
Texel	Tajimas' D	8	83100000	83200000	-0.046	2	1.00E+05
Texel	Tajimas' D	8	84700000	84800000	-0.321	2	1.00E+05
Texel	Tajimas' D	9	20800000	20900000	-0.368	2	1.00E+05
Texel	Tajimas' D	9	31800000	31900000	-0.369	3	1.00E+05
Texel	Tajimas' D	9	35800000	35900000	-0.128	2	1.00E+05

Texel	Tajimas' D	9	42900000	4.3e+07	-0.644	2	1.00E+05
Texel	Tajimas' D	9	47900000	4.8e+07	-0.224	2	1.00E+05
Texel	Tajimas' D	9	75000000	75100000	-0.021	2	1.00E+05
Texel	Tajimas' D	9	86300000	86400000	-0.123	2	1.00E+05
Texel	Tajimas' D	9	91900000	9.2e+07	-0.037	2	1.00E+05
Texel	Tajimas' D	10	6400000	6500000	-0.383	2	1.00E+05
Texel	Tajimas' D	10	17000000	17100000	-0.099	2	1.00E+05
Texel	Tajimas' D	10	17400000	17500000	-0.372	2	1.00E+05
Texel	Tajimas' D	10	27000000	27100000	-0.057	2	1.00E+05
Texel	Tajimas' D	10	37100000	37200000	-0.198	2	1.00E+05
Texel	Tajimas' D	12	20900000	2.1e+07	-0.492	2	1.00E+05
Texel	Tajimas' D	12	22000000	22100000	-0.659	2	1.00E+05
Texel	Tajimas' D	12	35500000	35600000	-0.16	2	1.00E+05
Texel	Tajimas' D	12	47700000	47800000	-0.316	2	1.00E+05
Texel	Tajimas' D	12	77900000	7.8e+07	-0.576	2	1.00E+05
Texel	Tajimas' D	12	81700000	81800000	-0.629	2	1.00E+05
Texel	Tajimas' D	13	39200000	39300000	-0.473	2	1.00E+05
Texel	Tajimas' D	13	43400000	43500000	-0.06	3	1.00E+05
Texel	Tajimas' D	13	73400000	73500000	-0.514	2	1.00E+05
Texel	Tajimas' D	14	27300000	27400000	-0.352	2	1.00E+05
Texel	Tajimas' D	14	32500000	32600000	-0.505	2	1.00E+05
Texel	Tajimas' D	14	48300000	48400000	-0.45	3	1.00E+05
Texel	Tajimas' D	15	13900000	1.4e+07	-0.714	2	1.00E+05
Texel	Tajimas' D	15	53100000	53200000	-0.046	2	1.00E+05
Texel	Tajimas' D	16	36600000	36700000	-0.561	2	1.00E+05
Texel	Tajimas' D	16	42400000	42500000	-0.022	2	1.00E+05
Texel	Tajimas' D	16	63500000	63600000	-0.409	2	1.00E+05
Texel	Tajimas' D	16	71700000	71800000	-0.206	2	1.00E+05
Texel	Tajimas' D	17	24400000	24500000	-0.614	2	1.00E+05
Texel	Tajimas' D	17	60900000	6.1e+07	-0.417	2	1.00E+05
Texel	Tajimas' D	18	11700000	11800000	-0.086	2	1.00E+05
Texel	Tajimas' D	18	15700000	15800000	-0.412	2	1.00E+05
Texel	Tajimas' D	18	36100000	36200000	-0.236	2	1.00E+05
Texel	Tajimas' D	18	41800000	41900000	-0.081	2	1.00E+05
Texel	Tajimas' D	18	43300000	43400000	-0.306	2	1.00E+05
Texel	Tajimas' D	18	47100000	47200000	-0.159	2	1.00E+05
Texel	Tajimas' D	18	51700000	51800000	-0.136	2	1.00E+05
Texel	Tajimas' D	18	52200000	52300000	-0.096	2	1.00E+05
Texel	Tajimas' D	19	8500000	8600000	-0.314	2	1.00E+05
Texel	Tajimas' D	19	39100000	39200000	-0.313	2	1.00E+05
Texel	Tajimas' D	19	46100000	46200000	-0.184	3	1.00E+05

Texel	Tajimas' D	20	3500000	3600000	-0.328	2	1.00E+05
Texel	Tajimas' D	20	3900000	4.00E+06	-0.61	2	1.00E+05
Texel	Tajimas' D	20	24600000	24700000	-0.167	3	1.00E+05
Texel	Tajimas' D	21	33600000	33700000	-0.609	2	1.00E+05
Texel	Tajimas' D	22	3500000	3600000	-0.094	2	1.00E+05
Texel	Tajimas' D	22	29700000	29800000	-0.668	2	1.00E+05
Texel	Tajimas' D	23	44100000	44200000	-0.573	2	1.00E+05
Texel	Tajimas' D	23	62600000	62700000	-0.459	2	1.00E+05
Texel	Tajimas' D	24	5500000	5600000	-0.138	2	1.00E+05
Texel	Tajimas' D	24	18800000	18900000	-0.289	2	1.00E+05
Texel	Tajimas' D	25	14300000	14400000	-0.587	2	1.00E+05
Texel	Tajimas' D	25	37700000	37800000	-0.24	2	1.00E+05
Texel	Tajimas' D	25	38400000	38500000	-0.098	2	1.00E+05
Texel	Tajimas' D	25	48100000	48200000	-0.338	2	1.00E+05
Texel	Tajimas' D	26	16400000	16500000	-0.067	2	1.00E+05
Vendeen	Tajimas' D	2	2800000	3.00E+06	-0.273, -0.554	2, 2	2.00E+05
Vendeen	Tajimas' D	3	117000000	117200000	-0.284, -0.397	2, 2	2.00E+05
Vendeen	Tajimas' D	5	53500000	53700000	-0.246, -0.837	2, 2	2.00E+05
Vendeen	Tajimas' D	10	40200000	40400000	-0.742, -0.799	2, 2	2.00E+05
Vendeen	Tajimas' D	1	11700000	11800000	-0.044	2	1.00E+05
Vendeen	Tajimas' D	1	12800000	12900000	-0.59	2	1.00E+05
Vendeen	Tajimas' D	1	13900000	1.4e+07	-0.44	2	1.00E+05
Vendeen	Tajimas' D	1	15500000	15600000	-0.544	2	1.00E+05
Vendeen	Tajimas' D	1	21400000	21500000	-0.297	2	1.00E+05
Vendeen	Tajimas' D	1	33900000	3.4e+07	-0.22	2	1.00E+05
Vendeen	Tajimas' D	1	40300000	40400000	-0.387	3	1.00E+05
Vendeen	Tajimas' D	1	50400000	50500000	-0.097	2	1.00E+05
Vendeen	Tajimas' D	1	61900000	6.2e+07	-0.838	2	1.00E+05
Vendeen	Tajimas' D	1	68100000	68200000	-0.119	2	1.00E+05
Vendeen	Tajimas' D	1	86300000	86400000	-0.44	3	1.00E+05
Vendeen	Tajimas' D	1	96500000	96600000	-0.591	2	1.00E+05
Vendeen	Tajimas' D	1	130000000	130100000	-0.069	3	1.00E+05
Vendeen	Tajimas' D	1	142000000	142100000	-0.169	2	1.00E+05
Vendeen	Tajimas' D	1	143100000	143200000	-0.484	2	1.00E+05
Vendeen	Tajimas' D	1	151500000	151600000	-0.004	2	1.00E+05
Vendeen	Tajimas' D	1	158600000	158700000	-0.153	2	1.00E+05
Vendeen	Tajimas' D	1	163800000	163900000	-0.01	2	1.00E+05
Vendeen	Tajimas' D	1	165200000	165300000	-0.289	2	1.00E+05
Vendeen	Tajimas' D	1	180300000	180400000	-0.092	2	1.00E+05
Vendeen	Tajimas' D	1	185400000	185500000	-0.587	2	1.00E+05
Vendeen	Tajimas' D	1	193700000	193800000	-0.185	2	1.00E+05

Vendeen	Tajimas' D	1	198000000	198100000	-0.018	2	1.00E+05
Vendeen	Tajimas' D	1	212500000	212600000	-0.081	2	1.00E+05
Vendeen	Tajimas' D	1	218400000	218500000	-0.534	2	1.00E+05
Vendeen	Tajimas' D	1	219200000	219300000	-0.115	2	1.00E+05
Vendeen	Tajimas' D	1	226100000	226200000	-0.044	3	1.00E+05
Vendeen	Tajimas' D	1	230000000	230100000	-0.214	2	1.00E+05
Vendeen	Tajimas' D	1	245900000	2.46e+08	-0.264	2	1.00E+05
Vendeen	Tajimas' D	1	250300000	250400000	-0.401	2	1.00E+05
Vendeen	Tajimas' D	1	257200000	257300000	-0.003	3	1.00E+05
Vendeen	Tajimas' D	1	269300000	269400000	-0.089	2	1.00E+05
Vendeen	Tajimas' D	2	3200000	3300000	-0.642	2	1.00E+05
Vendeen	Tajimas' D	2	26000000	26100000	-0.121	4	1.00E+05
Vendeen	Tajimas' D	2	27100000	27200000	-0.11	4	1.00E+05
Vendeen	Tajimas' D	2	27400000	27500000	-0.296	2	1.00E+05
Vendeen	Tajimas' D	2	29700000	29800000	-0.144	3	1.00E+05
Vendeen	Tajimas' D	2	35900000	3.6e+07	-0.068	2	1.00E+05
Vendeen	Tajimas' D	2	39100000	39200000	-0.757	2	1.00E+05
Vendeen	Tajimas' D	2	57800000	57900000	-0.522	2	1.00E+05
Vendeen	Tajimas' D	2	59900000	6.00E+07	-0.141	2	1.00E+05
Vendeen	Tajimas' D	2	78300000	78400000	-0.185	2	1.00E+05
Vendeen	Tajimas' D	2	87000000	87100000	-0.292	2	1.00E+05
Vendeen	Tajimas' D	2	87700000	87800000	-0.441	2	1.00E+05
Vendeen	Tajimas' D	2	93300000	93400000	-0.31	2	1.00E+05
Vendeen	Tajimas' D	2	105100000	105200000	-0.397	2	1.00E+05
Vendeen	Tajimas' D	2	115100000	115200000	-0.111	3	1.00E+05
Vendeen	Tajimas' D	2	117600000	117700000	-0.418	2	1.00E+05
Vendeen	Tajimas' D	2	128700000	128800000	-0.108	3	1.00E+05
Vendeen	Tajimas' D	2	128900000	1.29e+08	-0.477	2	1.00E+05
Vendeen	Tajimas' D	2	130600000	130700000	-0.857	2	1.00E+05
Vendeen	Tajimas' D	2	135500000	135600000	-0.183	2	1.00E+05
Vendeen	Tajimas' D	2	143200000	143300000	-0.768	2	1.00E+05
Vendeen	Tajimas' D	2	154000000	154100000	-0.021	2	1.00E+05
Vendeen	Tajimas' D	2	156900000	1.57e+08	-0.467	2	1.00E+05
Vendeen	Tajimas' D	2	158600000	158700000	-0.532	2	1.00E+05
Vendeen	Tajimas' D	2	166000000	166100000	-0.038	2	1.00E+05
Vendeen	Tajimas' D	2	224200000	224300000	-0.322	3	1.00E+05
Vendeen	Tajimas' D	2	227700000	227800000	-0.545	3	1.00E+05
Vendeen	Tajimas' D	2	228000000	228100000	-0.427	2	1.00E+05
Vendeen	Tajimas' D	2	236900000	2.37e+08	-0.246	2	1.00E+05
Vendeen	Tajimas' D	2	239200000	239300000	-0.329	2	1.00E+05
Vendeen	Tajimas' D	2	240100000	240200000	-0.035	2	1.00E+05

Vendeen	Tajimas' D	3	9200000	9300000	-0.063	2	1.00E+05
Vendeen	Tajimas' D	3	19800000	19900000	-0.25	2	1.00E+05
Vendeen	Tajimas' D	3	24000000	24100000	-0.471	2	1.00E+05
Vendeen	Tajimas' D	3	25700000	25800000	-0.052	2	1.00E+05
Vendeen	Tajimas' D	3	34400000	34500000	-0.168	2	1.00E+05
Vendeen	Tajimas' D	3	34700000	34800000	-0.013	2	1.00E+05
Vendeen	Tajimas' D	3	50100000	50200000	-0.313	2	1.00E+05
Vendeen	Tajimas' D	3	53900000	5.4e+07	-0.344	2	1.00E+05
Vendeen	Tajimas' D	3	63900000	6.4e+07	-0.049	2	1.00E+05
Vendeen	Tajimas' D	3	69100000	69200000	-0.115	2	1.00E+05
Vendeen	Tajimas' D	3	93000000	93100000	-0.159	2	1.00E+05
Vendeen	Tajimas' D	3	97000000	97100000	-0.267	3	1.00E+05
Vendeen	Tajimas' D	3	98700000	98800000	-0.524	2	1.00E+05
Vendeen	Tajimas' D	3	103100000	103200000	-0.093	2	1.00E+05
Vendeen	Tajimas' D	3	107900000	1.08e+08	-0.057	2	1.00E+05
Vendeen	Tajimas' D	3	116800000	116900000	-0.655	2	1.00E+05
Vendeen	Tajimas' D	3	122000000	122100000	-0.063	2	1.00E+05
Vendeen	Tajimas' D	3	128300000	128400000	-0.352	2	1.00E+05
Vendeen	Tajimas' D	3	129900000	1.3e+08	-0.16	3	1.00E+05
Vendeen	Tajimas' D	3	135300000	135400000	-0.537	2	1.00E+05
Vendeen	Tajimas' D	3	137000000	137100000	-0.461	2	1.00E+05
Vendeen	Tajimas' D	3	146800000	146900000	-0.429	2	1.00E+05
Vendeen	Tajimas' D	3	158900000	1.59e+08	-0.321	2	1.00E+05
Vendeen	Tajimas' D	3	159400000	159500000	-0.355	2	1.00E+05
Vendeen	Tajimas' D	3	168800000	168900000	-0.036	2	1.00E+05
Vendeen	Tajimas' D	3	174100000	174200000	-0.208	2	1.00E+05
Vendeen	Tajimas' D	3	177200000	177300000	-0.171	2	1.00E+05
Vendeen	Tajimas' D	3	225800000	225900000	-0.279	2	1.00E+05
Vendeen	Tajimas' D	4	3100000	3200000	-0.447	2	1.00E+05
Vendeen	Tajimas' D	4	15900000	1.6e+07	-0.043	2	1.00E+05
Vendeen	Tajimas' D	4	16100000	16200000	-0.489	2	1.00E+05
Vendeen	Tajimas' D	4	38100000	38200000	-0.012	2	1.00E+05
Vendeen	Tajimas' D	4	38700000	38800000	-0.275	2	1.00E+05
Vendeen	Tajimas' D	4	41700000	41800000	-0.091	2	1.00E+05
Vendeen	Tajimas' D	4	45900000	4.6e+07	-0.754	2	1.00E+05
Vendeen	Tajimas' D	4	46900000	4.7e+07	-0.436	2	1.00E+05
Vendeen	Tajimas' D	4	47300000	47400000	-0.122	3	1.00E+05
Vendeen	Tajimas' D	4	83100000	83200000	-0.774	2	1.00E+05
Vendeen	Tajimas' D	4	90400000	90500000	-0.269	3	1.00E+05
Vendeen	Tajimas' D	4	108100000	108200000	-0.565	2	1.00E+05
Vendeen	Tajimas' D	4	114200000	114300000	-0.652	2	1.00E+05

Vendeen	Tajimas' D	5	21100000	21200000	-0.254	2	1.00E+05
Vendeen	Tajimas' D	5	26200000	26300000	-0.18	2	1.00E+05
Vendeen	Tajimas' D	5	66300000	66400000	-0.701	2	1.00E+05
Vendeen	Tajimas' D	5	74400000	74500000	-0.449	2	1.00E+05
Vendeen	Tajimas' D	5	74700000	74800000	-0.138	2	1.00E+05
Vendeen	Tajimas' D	5	89600000	89700000	-0.468	2	1.00E+05
Vendeen	Tajimas' D	5	97900000	9.8e+07	-0.754	2	1.00E+05
Vendeen	Tajimas' D	5	111100000	111200000	-0.345	2	1.00E+05
Vendeen	Tajimas' D	6	21900000	2.2e+07	-0.707	2	1.00E+05
Vendeen	Tajimas' D	6	24200000	24300000	-0.389	2	1.00E+05
Vendeen	Tajimas' D	6	28100000	28200000	-0.431	2	1.00E+05
Vendeen	Tajimas' D	6	31800000	31900000	-0.675	2	1.00E+05
Vendeen	Tajimas' D	6	32900000	3.3e+07	-0.201	2	1.00E+05
Vendeen	Tajimas' D	6	37700000	37800000	-0.206	2	1.00E+05
Vendeen	Tajimas' D	6	40700000	40800000	-0.761	2	1.00E+05
Vendeen	Tajimas' D	6	41400000	41500000	-0.532	2	1.00E+05
Vendeen	Tajimas' D	6	41700000	41800000	-0.603	2	1.00E+05
Vendeen	Tajimas' D	6	55500000	55600000	-0.057	2	1.00E+05
Vendeen	Tajimas' D	6	62800000	62900000	-0.019	2	1.00E+05
Vendeen	Tajimas' D	6	66900000	6.7e+07	-0.497	2	1.00E+05
Vendeen	Tajimas' D	6	70500000	70600000	-0.674	2	1.00E+05
Vendeen	Tajimas' D	6	82400000	82500000	-0.091	2	1.00E+05
Vendeen	Tajimas' D	6	86000000	86100000	-0.082	2	1.00E+05
Vendeen	Tajimas' D	6	87600000	87700000	-0.075	2	1.00E+05
Vendeen	Tajimas' D	6	108400000	108500000	-0.11	2	1.00E+05
Vendeen	Tajimas' D	6	111600000	111700000	-0.799	2	1.00E+05
Vendeen	Tajimas' D	7	3300000	3400000	-0.131	2	1.00E+05
Vendeen	Tajimas' D	7	49500000	49600000	-0.207	2	1.00E+05
Vendeen	Tajimas' D	7	55700000	55800000	-0.207	2	1.00E+05
Vendeen	Tajimas' D	7	55900000	5.6e+07	-0.143	2	1.00E+05
Vendeen	Tajimas' D	7	61400000	61500000	-0.173	2	1.00E+05
Vendeen	Tajimas' D	7	65600000	65700000	-0.136	2	1.00E+05
Vendeen	Tajimas' D	7	104000000	104100000	-0.807	2	1.00E+05
Vendeen	Tajimas' D	8	1300000	1400000	-0.179	2	1.00E+05
Vendeen	Tajimas' D	8	4000000	4100000	-0.516	2	1.00E+05
Vendeen	Tajimas' D	8	5700000	5800000	-0.564	2	1.00E+05
Vendeen	Tajimas' D	8	6600000	6700000	-0.333	2	1.00E+05
Vendeen	Tajimas' D	8	28400000	28500000	-0.331	2	1.00E+05
Vendeen	Tajimas' D	8	31400000	31500000	-0.532	2	1.00E+05
Vendeen	Tajimas' D	8	33700000	33800000	-0.343	2	1.00E+05
Vendeen	Tajimas' D	8	35300000	35400000	-0.455	2	1.00E+05

Vendeen	Tajimas' D	8	37500000	37600000	-0.625	2	1.00E+05
Vendeen	Tajimas' D	8	48300000	48400000	-0.753	2	1.00E+05
Vendeen	Tajimas' D	8	48500000	48600000	-0.226	2	1.00E+05
Vendeen	Tajimas' D	8	63300000	63400000	-0.123	2	1.00E+05
Vendeen	Tajimas' D	8	68400000	68500000	-0.616	2	1.00E+05
Vendeen	Tajimas' D	8	68900000	6.9e+07	-0.18	2	1.00E+05
Vendeen	Tajimas' D	9	3300000	3400000	-0.04	2	1.00E+05
Vendeen	Tajimas' D	9	3600000	3700000	-0.021	2	1.00E+05
Vendeen	Tajimas' D	9	7900000	8.00E+06	-0.339	2	1.00E+05
Vendeen	Tajimas' D	9	20500000	20600000	-0.228	2	1.00E+05
Vendeen	Tajimas' D	9	30600000	30700000	-0.746	2	1.00E+05
Vendeen	Tajimas' D	9	41400000	41500000	-0.053	2	1.00E+05
Vendeen	Tajimas' D	9	67600000	67700000	-0.428	2	1.00E+05
Vendeen	Tajimas' D	9	73100000	73200000	-0.324	3	1.00E+05
Vendeen	Tajimas' D	9	78600000	78700000	-0.123	3	1.00E+05
Vendeen	Tajimas' D	10	26200000	26300000	-0.258	2	1.00E+05
Vendeen	Tajimas' D	10	27900000	2.8e+07	-0.199	2	1.00E+05
Vendeen	Tajimas' D	10	29300000	29400000	-0.072	4	1.00E+05
Vendeen	Tajimas' D	10	30700000	30800000	-0.811	2	1.00E+05
Vendeen	Tajimas' D	10	40000000	40100000	-0.732	2	1.00E+05
Vendeen	Tajimas' D	10	42300000	42400000	-0.008	2	1.00E+05
Vendeen	Tajimas' D	10	52000000	52100000	-0.226	2	1.00E+05
Vendeen	Tajimas' D	10	54000000	54100000	-0.173	2	1.00E+05
Vendeen	Tajimas' D	10	58700000	58800000	-0.521	2	1.00E+05
Vendeen	Tajimas' D	10	60400000	60500000	-0.049	2	1.00E+05
Vendeen	Tajimas' D	10	69900000	7.00E+07	-0.301	2	1.00E+05
Vendeen	Tajimas' D	10	72600000	72700000	-0.253	2	1.00E+05
Vendeen	Tajimas' D	10	83800000	83900000	-0.015	2	1.00E+05
Vendeen	Tajimas' D	10	86000000	86100000	-0.354	2	1.00E+05
Vendeen	Tajimas' D	10	90700000	90800000	-0.374	2	1.00E+05
Vendeen	Tajimas' D	11	5800000	5900000	-0.769	2	1.00E+05
Vendeen	Tajimas' D	12	13400000	13500000	-0.618	2	1.00E+05
Vendeen	Tajimas' D	12	17500000	17600000	-0.393	2	1.00E+05
Vendeen	Tajimas' D	12	24200000	24300000	-0.24	2	1.00E+05
Vendeen	Tajimas' D	12	53400000	53500000	-0.67	2	1.00E+05
Vendeen	Tajimas' D	12	55100000	55200000	-0.277	2	1.00E+05
Vendeen	Tajimas' D	12	59300000	59400000	-0.643	2	1.00E+05
Vendeen	Tajimas' D	12	63500000	63600000	-0.76	2	1.00E+05
Vendeen	Tajimas' D	12	64200000	64300000	-0.388	2	1.00E+05
Vendeen	Tajimas' D	12	65600000	65700000	-0.103	2	1.00E+05
Vendeen	Tajimas' D	13	22100000	22200000	-0.004	2	1.00E+05

Vendeen	Tajimas' D	13	22400000	22500000	-0.391	2	1.00E+05
Vendeen	Tajimas' D	13	34200000	34300000	-0.172	2	1.00E+05
Vendeen	Tajimas' D	13	48100000	48200000	-0.051	3	1.00E+05
Vendeen	Tajimas' D	13	68900000	6.9e+07	-0.277	2	1.00E+05
Vendeen	Tajimas' D	14	31700000	31800000	-0.139	3	1.00E+05
Vendeen	Tajimas' D	15	1500000	1600000	-0.273	2	1.00E+05
Vendeen	Tajimas' D	15	16000000	16100000	-0.027	2	1.00E+05
Vendeen	Tajimas' D	15	42300000	42400000	-0.696	2	1.00E+05
Vendeen	Tajimas' D	15	49200000	49300000	-0.46	2	1.00E+05
Vendeen	Tajimas' D	15	61700000	61800000	-0.219	2	1.00E+05
Vendeen	Tajimas' D	15	72200000	72300000	-0.196	2	1.00E+05
Vendeen	Tajimas' D	16	14700000	14800000	-0.007	2	1.00E+05
Vendeen	Tajimas' D	16	17700000	17800000	-0.556	2	1.00E+05
Vendeen	Tajimas' D	16	18800000	18900000	-0.334	2	1.00E+05
Vendeen	Tajimas' D	16	26600000	26700000	-0.157	2	1.00E+05
Vendeen	Tajimas' D	16	27100000	27200000	-0.123	2	1.00E+05
Vendeen	Tajimas' D	16	28200000	28300000	-0.179	2	1.00E+05
Vendeen	Tajimas' D	16	36600000	36700000	-0.514	2	1.00E+05
Vendeen	Tajimas' D	16	52000000	52100000	-0.07	2	1.00E+05
Vendeen	Tajimas' D	16	56100000	56200000	-0.021	2	1.00E+05
Vendeen	Tajimas' D	17	20400000	20500000	-0.245	2	1.00E+05
Vendeen	Tajimas' D	17	31900000	3.2e+07	-0.276	3	1.00E+05
Vendeen	Tajimas' D	17	32800000	32900000	-0.269	2	1.00E+05
Vendeen	Tajimas' D	18	2700000	2800000	-0.05	2	1.00E+05
Vendeen	Tajimas' D	18	21900000	2.2e+07	-0.303	2	1.00E+05
Vendeen	Tajimas' D	18	31500000	31600000	-0.122	2	1.00E+05
Vendeen	Tajimas' D	18	33700000	33800000	-0.894	3	1.00E+05
Vendeen	Tajimas' D	18	42100000	42200000	-0.279	2	1.00E+05
Vendeen	Tajimas' D	18	46300000	46400000	-0.545	2	1.00E+05
Vendeen	Tajimas' D	18	67500000	67600000	-0.016	2	1.00E+05
Vendeen	Tajimas' D	19	22400000	22500000	-0.052	2	1.00E+05
Vendeen	Tajimas' D	19	25700000	25800000	-0.527	2	1.00E+05
Vendeen	Tajimas' D	19	32000000	32100000	-0.8	2	1.00E+05
Vendeen	Tajimas' D	19	38200000	38300000	-0.254	2	1.00E+05
Vendeen	Tajimas' D	19	38400000	38500000	-0.367	2	1.00E+05
Vendeen	Tajimas' D	19	40200000	40300000	-0.006	2	1.00E+05
Vendeen	Tajimas' D	20	11300000	11400000	-0.608	2	1.00E+05
Vendeen	Tajimas' D	20	25200000	25300000	-0.312	2	1.00E+05
Vendeen	Tajimas' D	22	3500000	3600000	-0.03	2	1.00E+05
Vendeen	Tajimas' D	22	14900000	1.5e+07	-0.315	2	1.00E+05
Vendeen	Tajimas' D	22	32600000	32700000	-0.184	2	1.00E+05

Vendeen	Tajimas' D	22	37600000	37700000	-0.573	2	1.00E+05
Vendeen	Tajimas' D	22	38800000	38900000	-0.53	2	1.00E+05
Vendeen	Tajimas' D	23	18400000	18500000	-0.083	2	1.00E+05
Vendeen	Tajimas' D	23	35600000	35700000	-0.075	3	1.00E+05
Vendeen	Tajimas' D	23	59400000	59500000	-0.473	2	1.00E+05
Vendeen	Tajimas' D	23	63000000	63100000	-0.051	2	1.00E+05
Vendeen	Tajimas' D	25	27600000	27700000	-0.534	2	1.00E+05
Vendeen	Tajimas' D	25	30600000	30700000	-0.587	2	1.00E+05
Vendeen	Tajimas' D	25	38700000	38800000	-0.285	2	1.00E+05
Vendeen	Tajimas' D	26	16300000	16400000	-0.177	3	1.00E+05
Vendeen	Tajimas' D	26	17000000	17100000	-0.573	2	1.00E+05

CHR: Chromosome, N_SNP: number of SNP, len: length of the selection signatures

Supplementary Table S3. Annotated genes within the selection signatures regions

Breed	Method	gene_id	CHR	Start	End	gene_name
Belclare	iHS	ENSOARG00000000708	4	10700000	10800000	<i>CALCR</i>
Belclare	iHS	ENSOARG00000000850	2	1.36e+08	136100000	<i>RAPGEF4</i>
Belclare	iHS	ENSOARG00000001888	26	32900000	3.3e+07	<i>ADAM32</i>
Belclare	iHS	ENSOARG00000002329	2	137700000	137800000	<i>GAD1</i>
Belclare	iHS	ENSOARG00000002431	2	137700000	137800000	<i>SP5</i>
Belclare	iHS	ENSOARG00000002489	9	45100000	45200000	<i>LOC101103244</i>
Belclare	iHS	ENSOARG00000003701	1	233600000	233700000	<i>MBNL1</i>
Belclare	iHS	ENSOARG00000004403	25	17800000	17900000	<i>ARID5B</i>
Belclare	iHS	ENSOARG00000005159	23	12600000	12700000	<i>LOC101104705</i>
Belclare	iHS	ENSOARG00000005581	6	43200000	43300000	<i>PPARGC1A</i>
Belclare	iHS	ENSOARG00000005774	1	243400000	243500000	
Belclare	iHS	ENSOARG00000005937	16	1.3e+07	13100000	<i>LOC101122306</i>
Belclare	iHS	ENSOARG00000006163	4	63400000	63500000	<i>BBS9</i>
Belclare	iHS	ENSOARG00000006712	2	1.2e+07	12100000	<i>ECPAS</i>
Belclare	iHS	ENSOARG00000006738	2	1.2e+07	12100000	
Belclare	iHS	ENSOARG00000006769	4	96900000	9.7e+07	
Belclare	iHS	ENSOARG00000006792	20	6300000	6400000	
Belclare	iHS	ENSOARG00000007284	17	9900000	1.00E+07	<i>ARHGAP10</i>
Belclare	iHS	ENSOARG00000008952	16	3.3e+07	33100000	
Belclare	iHS	ENSOARG00000009178	1	256300000	256400000	<i>CPNE4</i>
Belclare	iHS	ENSOARG00000009480	1	257300000	257400000	
Belclare	iHS	ENSOARG00000009615	1	257300000	257400000	<i>BRWD1</i>
Belclare	iHS	ENSOARG00000011169	9	31900000	3.2e+07	
Belclare	iHS	ENSOARG00000011206	9	31900000	3.2e+07	<i>SPIDR</i>
Belclare	iHS	ENSOARG00000011412	5	41100000	41200000	<i>CIRBP</i>
Belclare	iHS	ENSOARG00000011420	5	41100000	41200000	
Belclare	iHS	ENSOARG00000011459	5	41100000	41200000	
Belclare	iHS	ENSOARG00000011551	5	41100000	41200000	<i>PWWP3A</i>
Belclare	iHS	ENSOARG00000011689	20	9400000	9500000	<i>DEF6</i>
Belclare	iHS	ENSOARG00000011785	20	9400000	9500000	<i>PPARD</i>
Belclare	iHS	ENSOARG00000011962	1	262500000	262600000	<i>TRPM2</i>
Belclare	iHS	ENSOARG00000012006	1	262500000	262600000	<i>LRRC3</i>
Belclare	iHS	ENSOARG00000012044	1	262500000	262600000	<i>TSPEAR</i>
Belclare	iHS	ENSOARG00000012089	1	262500000	262600000	
Belclare	iHS	ENSOARG00000012236	17	16400000	16500000	<i>RNF150</i>
Belclare	iHS	ENSOARG00000012836	5	67600000	67700000	<i>EBF1</i>
Belclare	iHS	ENSOARG00000013110	9	67600000	67700000	<i>PKHD1L1</i>
Belclare	iHS	ENSOARG00000013378	2	71900000	7.2e+07	<i>GLIS3</i>

Belclare	iHS	ENSOARG00000015222	1	233600000	233700000	
Belclare	iHS	ENSOARG00000015421	3	122100000	122200000	
Belclare	iHS	ENSOARG00000015513	10	49100000	49200000	<i>KLF12</i>
Belclare	iHS	ENSOARG00000015936	2	1.16e+08	116200000	<i>UGGT1</i>
Belclare	iHS	ENSOARG00000016040	22	12800000	12900000	<i>HECTD2</i>
Belclare	iHS	ENSOARG00000016054	2	116800000	116900000	<i>MYO7B</i>
Belclare	iHS	ENSOARG00000016057	15	60500000	60600000	<i>ELP4</i>
Belclare	iHS	ENSOARG00000016097	2	116800000	116900000	<i>IWS1</i>
Belclare	iHS	ENSOARG00000016171	3	77400000	77500000	<i>SOCS5</i>
Belclare	iHS	ENSOARG00000016228	3	132100000	132200000	<i>NFE2</i>
Belclare	iHS	ENSOARG00000016240	3	132100000	132200000	<i>HNRNPA1</i>
Belclare	iHS	ENSOARG00000016251	3	132100000	132200000	<i>CBX5</i>
Belclare	iHS	ENSOARG00000016261	3	132100000	132200000	<i>SMUG1</i>
Belclare	iHS	ENSOARG00000016593	5	88100000	88200000	<i>ARRDC3</i>
Belclare	iHS	ENSOARG00000016825	5	22200000	22300000	<i>ADAMTS19</i>
Belclare	iHS	ENSOARG00000016969	2	129900000	1.3e+08	<i>CCDC141</i>
Belclare	iHS	ENSOARG00000017119	7	9100000	9200000	<i>AP3B1</i>
Belclare	iHS	ENSOARG00000017348	2	130800000	130900000	<i>RBM45</i>
Belclare	iHS	ENSOARG00000017949	12	59300000	59400000	<i>CEP350</i>
Belclare	iHS	ENSOARG00000018162	4	43600000	43700000	<i>PTPN12</i>
Belclare	iHS	ENSOARG00000019457	3	139500000	139600000	<i>SLC38A4</i>
Belclare	iHS	ENSOARG00000019614	2	129100000	129200000	
Belclare	iHS	ENSOARG00000019843	2	130800000	130900000	
Belclare	iHS	ENSOARG00000020168	9	31900000	3.2e+07	
Belclare	iHS	ENSOARG00000020198	3	149100000	149200000	<i>KCNMB4</i>
Belclare	iHS	ENSOARG00000020200	3	149100000	149200000	
Belclare	iHS	ENSOARG00000020211	3	149100000	149200000	<i>CNOT2</i>
Belclare	iHS	ENSOARG00000020424	1	16800000	16900000	
Belclare	iHS	ENSOARG00000020435	1	16800000	16900000	<i>CCDC30</i>
Belclare	iHS	ENSOARG00000020722	1	2.1e+08	210100000	<i>NAALADL2</i>
Belclare	iHS	ENSOARG00000021375	23	12600000	12700000	<i>5S</i>
Belclare	iHS	ENSOARG00000021612	2	71900000	7.2e+07	
Belclare	iHS	ENSOARG00000021817	1	247900000	2.48e+08	
Belclare	iHS	ENSOARG00000022162	1	227700000	227800000	<i>7SK</i>
Belclare	iHS	ENSOARG00000023173	4	10700000	10800000	
Belclare	iHS	ENSOARG00000023219	4	10700000	10800000	
Belclare	iHS	ENSOARG00000023984	3	149100000	149200000	
Belclare	iHS	ENSOARG00000024290	4	10700000	10800000	
Belclare	iHS	ENSOARG00000024498	4	43600000	43700000	<i>LOC114114644</i>
Belclare	iHS	ENSOARG00000024550	13	15400000	15500000	<i>LOC114117687</i>
Belclare	iHS	ENSOARG00000025307	5	41100000	41200000	

Belclare	iHS	ENSOARG000000025308	5	41100000	41200000	
Belclare	iHS	ENSOARG000000025616	1	227700000	227800000	
Belclare	iHS	ENSOARG000000025801	2	1.16e+08	116200000	
Belclare	iHS	ENSOARG000000025848	2	218400000	218500000	
Belclare	iHS	ENSOARG000000026026	3	132100000	132200000	
Charollais	iHS	ENSOARG00000000368	1	102100000	102200000	
Charollais	iHS	ENSOARG00000000377	1	102100000	102200000	
Charollais	iHS	ENSOARG00000001169	10	7.1e+07	71100000	
Charollais	iHS	ENSOARG00000001266	4	1.06e+08	106100000	TAS2R39
Charollais	iHS	ENSOARG00000001611	2	136800000	136900000	SLC25A12
Charollais	iHS	ENSOARG00000001885	2	136800000	136900000	DYNC1I2
Charollais	iHS	ENSOARG00000001899	2	235300000	235400000	PUM1
Charollais	iHS	ENSOARG00000002190	1	193900000	1.94e+08	LOC101107565
Charollais	iHS	ENSOARG00000002243	15	73500000	73600000	SYT13
Charollais	iHS	ENSOARG00000002952	1	103400000	103500000	ADAR
Charollais	iHS	ENSOARG00000002973	1	103400000	103500000	KCNN3
Charollais	iHS	ENSOARG00000003363	7	98100000	98200000	
Charollais	iHS	ENSOARG00000003621	7	99700000	99800000	CTDSPL2
Charollais	iHS	ENSOARG00000003638	7	99700000	99800000	EIF3J
Charollais	iHS	ENSOARG00000003712	7	99700000	99800000	SPG11
Charollais	iHS	ENSOARG00000004511	1	235600000	235800000	EIF2A
Charollais	iHS	ENSOARG00000004546	1	235600000	235800000	
Charollais	iHS	ENSOARG00000004604	1	235600000	235800000	TSC22D2
Charollais	iHS	ENSOARG00000004710	8	83200000	83300000	SLC22A3
Charollais	iHS	ENSOARG00000004726	8	83200000	83300000	
Charollais	iHS	ENSOARG00000005774	1	243400000	243500000	
Charollais	iHS	ENSOARG00000006464	2	241200000	241400000	NCMAP
Charollais	iHS	ENSOARG00000006575	2	241200000	241400000	RCAN3
Charollais	iHS	ENSOARG00000006578	1	102100000	102200000	PRR9
Charollais	iHS	ENSOARG00000006593	2	241200000	241400000	NIPAL3
Charollais	iHS	ENSOARG00000007318	2	242100000	242200000	ID3
Charollais	iHS	ENSOARG00000008438	5	6.00E+07	60100000	GM2A
Charollais	iHS	ENSOARG00000008506	5	6.00E+07	60100000	SLC36A3
Charollais	iHS	ENSOARG00000008599	5	6.00E+07	60100000	SLC36A2
Charollais	iHS	ENSOARG00000008769	15	77400000	77500000	
Charollais	iHS	ENSOARG00000008778	15	77400000	77500000	
Charollais	iHS	ENSOARG00000008785	15	77400000	77500000	
Charollais	iHS	ENSOARG00000009284	6	84400000	84500000	LOC101118447
Charollais	iHS	ENSOARG00000009377	6	84400000	84500000	
Charollais	iHS	ENSOARG00000009480	1	257300000	257400000	
Charollais	iHS	ENSOARG00000009615	1	257300000	257400000	BRWD1

Charollais	iHS	ENSOARG00000010341	6	111500000	111600000	
Charollais	iHS	ENSOARG00000010382	2	171800000	171900000	THSD7B
Charollais	iHS	ENSOARG00000010949	1	112500000	112600000	CCDC190
Charollais	iHS	ENSOARG00000011128	1	261300000	261400000	CBS
Charollais	iHS	ENSOARG00000011162	1	261300000	261400000	
Charollais	iHS	ENSOARG00000011186	1	261300000	261400000	CRYAA
Charollais	iHS	ENSOARG00000011235	1	261500000	261600000	SIK1
Charollais	iHS	ENSOARG00000011498	13	30900000	3.1e+07	ST8SIA6
Charollais	iHS	ENSOARG00000012763	15	77400000	77500000	LOC101118639
Charollais	iHS	ENSOARG00000012960	3	212300000	212400000	DCP1B
Charollais	iHS	ENSOARG00000013075	2	67200000	67300000	PIP5K1B
Charollais	iHS	ENSOARG00000013949	3	1.04e+08	104200000	SNRNP200
Charollais	iHS	ENSOARG00000013975	3	1.04e+08	104200000	CIAO1
Charollais	iHS	ENSOARG00000013986	3	1.04e+08	104200000	TMEM127
Charollais	iHS	ENSOARG00000013997	3	1.04e+08	104200000	STARD7
Charollais	iHS	ENSOARG00000014009	3	1.04e+08	104200000	
Charollais	iHS	ENSOARG00000014020	3	1.04e+08	104200000	ASTL
Charollais	iHS	ENSOARG00000014173	3	169900000	1.7e+08	ANO4
Charollais	iHS	ENSOARG00000014307	5	77500000	77600000	LOC101120408
Charollais	iHS	ENSOARG00000015635	1	136900000	1.37e+08	TMPRSS15
Charollais	iHS	ENSOARG00000016107	1	140900000	1.41e+08	
Charollais	iHS	ENSOARG00000016583	3	1.04e+08	104200000	
Charollais	iHS	ENSOARG00000016751	2	125600000	125700000	NCKAP1
Charollais	iHS	ENSOARG00000017493	6	91400000	91500000	SEPTIN11
Charollais	iHS	ENSOARG00000017528	4	1.06e+08	106100000	TAS2R40
Charollais	iHS	ENSOARG00000017650	4	1.06e+08	106100000	GSTK1
Charollais	iHS	ENSOARG00000018220	4	85800000	85900000	CPED1
Charollais	iHS	ENSOARG00000018324	4	85800000	85900000	WNT16
Charollais	iHS	ENSOARG00000018378	4	85800000	85900000	FAM3C
Charollais	iHS	ENSOARG00000018708	2	207600000	207700000	ADAM23
Charollais	iHS	ENSOARG00000018743	2	207600000	207700000	DYTN
Charollais	iHS	ENSOARG00000018795	1	83800000	83900000	NTNG1
Charollais	iHS	ENSOARG00000018884	3	136800000	136900000	
Charollais	iHS	ENSOARG00000018924	5	106700000	106800000	TMEM232
Charollais	iHS	ENSOARG00000019383	2	217200000	217300000	MARCHF4
Charollais	iHS	ENSOARG00000019427	3	220600000	220700000	PPARA
Charollais	iHS	ENSOARG00000019442	3	220600000	220700000	CDPF1
Charollais	iHS	ENSOARG00000019697	2	174900000	1.75e+08	LOC101107417
Charollais	iHS	ENSOARG00000020446	1	193900000	1.94e+08	
Charollais	iHS	ENSOARG00000020748	1	213200000	213300000	FNDC3B
Charollais	iHS	ENSOARG00000022135	7	99700000	99800000	U6

Charollais	iHS	ENSOARG000000023130	1	235600000	235800000	LOC114114243
Charollais	iHS	ENSOARG000000024241	1	235600000	235800000	5S_rR
Charollais	iHS	ENSOARG000000024244	2	174900000	1.75e+08	LOC114116507
Charollais	iHS	ENSOARG000000024787	1	142600000	142700000	5S_rRNA
Charollais	iHS	ENSOARG000000025842	2	207600000	207700000	
Charollais	iHS	ENSOARG000000025843	2	207600000	207700000	
Charollais	iHS	ENSOARG000000026020	3	126100000	126200000	
Charollais	iHS	ENSOARG000000026030	3	136800000	136900000	
Charollais	iHS	ENSOARG000000026322	10	69700000	69800000	
Charollais	iHS	ENSOARG000000026597	6	84400000	84500000	
Charollais	iHS	ENSOARG000000026601	6	91400000	91500000	
Suffolk	iHS	ENSOARG00000000321	22	13600000	13700000	IDE
Suffolk	iHS	ENSOARG000000001249	6	9.7e+07	97100000	SCD5
Suffolk	iHS	ENSOARG000000001884	3	205900000	2.06e+08	RIMKLB
Suffolk	iHS	ENSOARG000000001968	3	205900000	2.06e+08	MFAP5
Suffolk	iHS	ENSOARG000000001982	3	205900000	2.06e+08	AICDA
Suffolk	iHS	ENSOARG000000002190	1	193900000	1.94e+08	LOC101107565
Suffolk	iHS	ENSOARG000000003049	2	238100000	238200000	
Suffolk	iHS	ENSOARG000000003071	2	238100000	238200000	EYA3
Suffolk	iHS	ENSOARG000000003100	13	51200000	51300000	DNAAF9
Suffolk	iHS	ENSOARG000000003161	6	98800000	98900000	
Suffolk	iHS	ENSOARG000000003685	13	51200000	51300000	SLC4A11
Suffolk	iHS	ENSOARG000000006066	6	102800000	102900000	LOC101113239
Suffolk	iHS	ENSOARG000000006299	6	102800000	102900000	
Suffolk	iHS	ENSOARG000000006402	1	244800000	244900000	GK5
Suffolk	iHS	ENSOARG000000006427	4	95900000	9.6e+07	PLXNA4
Suffolk	iHS	ENSOARG000000006450	1	244800000	244900000	TFDP2
Suffolk	iHS	ENSOARG000000007167	10	12100000	12200000	VWA8
Suffolk	iHS	ENSOARG000000007917	6	102800000	102900000	
Suffolk	iHS	ENSOARG000000009178	1	256300000	256400000	CPNE4
Suffolk	iHS	ENSOARG000000009321	26	18600000	18700000	MTMR7
Suffolk	iHS	ENSOARG000000009386	26	18600000	18700000	VPS37A
Suffolk	iHS	ENSOARG000000010382	2	171900000	172100000	THSD7B
Suffolk	iHS	ENSOARG000000010634	18	54300000	54400000	STRC
Suffolk	iHS	ENSOARG000000010849	18	54300000	54400000	CATSPER2
Suffolk	iHS	ENSOARG000000010890	12	5.2e+07	52100000	PDPN
Suffolk	iHS	ENSOARG000000010912	18	54300000	54400000	PDIA3
Suffolk	iHS	ENSOARG000000010922	2	174400000	174500000	ZRANB3
Suffolk	iHS	ENSOARG000000011027	2	174400000	174500000	RAB3GAP1
Suffolk	iHS	ENSOARG000000011041	18	54300000	54400000	ELL3
Suffolk	iHS	ENSOARG000000011107	13	53500000	53600000	KCNQ2

Suffolk	iHS	ENSOARG00000011129	18	54300000	54400000	<i>SERF2</i>
Suffolk	iHS	ENSOARG00000011155	18	54300000	54400000	<i>SERINC4</i>
Suffolk	iHS	ENSOARG00000011175	18	54300000	54400000	
Suffolk	iHS	ENSOARG00000011195	13	53500000	53600000	<i>CHRNA4</i>
Suffolk	iHS	ENSOARG00000011234	18	54300000	54400000	<i>MFAP1</i>
Suffolk	iHS	ENSOARG00000011265	13	53500000	53600000	
Suffolk	iHS	ENSOARG00000011351	18	54300000	54400000	<i>WDR76</i>
Suffolk	iHS	ENSOARG00000011406	13	53500000	53600000	<i>LOC101112800</i>
Suffolk	iHS	ENSOARG00000011436	2	175300000	175400000	<i>MGAT5</i>
Suffolk	iHS	ENSOARG00000013875	1	121900000	1.22e+08	<i>HUNK</i>
Suffolk	iHS	ENSOARG00000013903	2	192200000	192300000	<i>STAT1</i>
Suffolk	iHS	ENSOARG00000014722	3	170300000	170400000	<i>UTP20</i>
Suffolk	iHS	ENSOARG00000015007	3	170300000	170400000	<i>ARL1</i>
Suffolk	iHS	ENSOARG00000015018	3	170300000	170400000	<i>SPIC</i>
Suffolk	iHS	ENSOARG00000015086	17	1.6e+07	16100000	
Suffolk	iHS	ENSOARG00000015555	1	133600000	133700000	<i>NCAM2</i>
Suffolk	iHS	ENSOARG00000015680	3	125900000	1.26e+08	<i>ATP2B1</i>
Suffolk	iHS	ENSOARG00000015860	11	18800000	18900000	
Suffolk	iHS	ENSOARG00000015871	3	129900000	1.3e+08	<i>CRADD</i>
Suffolk	iHS	ENSOARG00000016019	11	18800000	18900000	
Suffolk	iHS	ENSOARG00000016020	11	18800000	18900000	
Suffolk	iHS	ENSOARG00000016340	3	23500000	23600000	<i>NBAS</i>
Suffolk	iHS	ENSOARG00000016779	3	129900000	1.3e+08	
Suffolk	iHS	ENSOARG00000016973	9	42100000	42200000	
Suffolk	iHS	ENSOARG00000017011	9	42100000	42200000	<i>LOC101119648</i>
Suffolk	iHS	ENSOARG00000018916	1	171700000	171900000	<i>MYH15</i>
Suffolk	iHS	ENSOARG00000018967	3	179900000	1.8e+08	<i>CACNG2</i>
Suffolk	iHS	ENSOARG00000018970	1	171700000	171900000	<i>CIP2A</i>
Suffolk	iHS	ENSOARG00000018994	3	179900000	1.8e+08	<i>IFT27</i>
Suffolk	iHS	ENSOARG00000019010	1	171700000	171900000	<i>DZIP3</i>
Suffolk	iHS	ENSOARG00000019133	2	210500000	210600000	<i>UNC80</i>
Suffolk	iHS	ENSOARG00000019272	3	180800000	180900000	<i>LOC101103965</i>
Suffolk	iHS	ENSOARG00000019430	1	86700000	86800000	
Suffolk	iHS	ENSOARG00000019641	1	178900000	1.79e+08	<i>LSAMP</i>
Suffolk	iHS	ENSOARG00000019688	2	1.65e+08	165100000	<i>RPL26</i>
Suffolk	iHS	ENSOARG00000019722	3	1.87e+08	187100000	<i>PPFIBP1</i>
Suffolk	iHS	ENSOARG00000019741	3	1.87e+08	187100000	<i>C3H12orf71</i>
Suffolk	iHS	ENSOARG00000020205	1	186500000	186600000	<i>CCDC14</i>
Suffolk	iHS	ENSOARG00000020443	1	193500000	193600000	<i>FGF12</i>
Suffolk	iHS	ENSOARG00000020446	1	193900000	1.94e+08	
Suffolk	iHS	ENSOARG00000020867	7	49800000	49900000	<i>CGNL1</i>

Suffolk	iHS	ENSOARG000000021709	21	1.6e+07	16100000	
Suffolk	iHS	ENSOARG000000022171	2	57800000	57900000	
Suffolk	iHS	ENSOARG000000023504	18	54300000	54400000	5S_rR
Suffolk	iHS	ENSOARG000000023591	1	186500000	186600000	
Suffolk	iHS	ENSOARG000000023897	6	9.7e+07	97100000	
Suffolk	iHS	ENSOARG000000023929	18	54300000	54400000	
Suffolk	iHS	ENSOARG000000024064	18	54300000	54400000	U6
Suffolk	iHS	ENSOARG000000025657	17	1.6e+07	16100000	
Suffolk	iHS	ENSOARG000000025771	2	57800000	57900000	
Suffolk	iHS	ENSOARG000000025800	2	115700000	115800000	
Suffolk	iHS	ENSOARG000000025827	2	171900000	172100000	
Suffolk	iHS	ENSOARG000000026355	11	18800000	18900000	
Suffolk	iHS	ENSOARG000000026970	16	45900000	4.6e+07	
Suffolk	iHS	ENSOARG000000026971	16	45900000	4.6e+07	
Texel	iHS	ENSOARG000000000690	1	215600000	215700000	LRRC34
Texel	iHS	ENSOARG000000000757	1	215600000	215700000	MYNN
Texel	iHS	ENSOARG000000000805	1	215600000	215700000	ACTRT3
Texel	iHS	ENSOARG000000001169	10	7.1e+07	71100000	
Texel	iHS	ENSOARG000000001223	4	104800000	104900000	TAS2R4
Texel	iHS	ENSOARG000000002072	3	2.06e+08	206100000	LOC101105238
Texel	iHS	ENSOARG000000002084	3	2.06e+08	206100000	LOC101103967
Texel	iHS	ENSOARG000000002095	3	2.06e+08	206100000	
Texel	iHS	ENSOARG000000002111	3	2.06e+08	206100000	LOC101104982
Texel	iHS	ENSOARG000000003092	3	206600000	206700000	
Texel	iHS	ENSOARG000000003159	3	206600000	206700000	
Texel	iHS	ENSOARG000000004818	8	86900000	8.7e+07	
Texel	iHS	ENSOARG000000007641	3	207800000	207900000	NOP2
Texel	iHS	ENSOARG000000007751	3	207800000	207900000	IFFO1
Texel	iHS	ENSOARG000000007831	6	104600000	104700000	SLC2A9
Texel	iHS	ENSOARG000000007894	3	207800000	207900000	GAPDH
Texel	iHS	ENSOARG000000008036	3	207800000	207900000	NCAPD2
Texel	iHS	ENSOARG000000008053	2	155700000	155800000	ARL6IP6
Texel	iHS	ENSOARG000000008158	2	155700000	155800000	PRPF40A
Texel	iHS	ENSOARG000000008170	3	207800000	207900000	MRPL51
Texel	iHS	ENSOARG000000008237	3	207800000	207900000	VAMP1
Texel	iHS	ENSOARG000000008253	3	207800000	207900000	TAPBPL
Texel	iHS	ENSOARG000000008264	2	155700000	155800000	FMNL2
Texel	iHS	ENSOARG000000008332	3	207800000	207900000	CD27
Texel	iHS	ENSOARG000000008529	3	2.08e+08	208100000	PLEKHG6
Texel	iHS	ENSOARG000000008605	3	2.08e+08	208100000	CD9
Texel	iHS	ENSOARG000000009243	3	209200000	209300000	

Texel	iHS	ENSOARG00000013475	3	2.13e+08	213100000	
Texel	iHS	ENSOARG00000013489	3	2.13e+08	213100000	<i>ATP6V1E1</i>
Texel	iHS	ENSOARG00000013505	3	2.13e+08	213100000	
Texel	iHS	ENSOARG00000013692	2	191800000	191900000	
Texel	iHS	ENSOARG00000013710	2	191800000	191900000	
Texel	iHS	ENSOARG00000013903	2	192300000	192400000	<i>STAT1</i>
Texel	iHS	ENSOARG00000013956	3	213500000	213600000	
Texel	iHS	ENSOARG00000013969	3	213500000	213600000	<i>NOL12</i>
Texel	iHS	ENSOARG00000014071	3	213500000	213600000	<i>TRIOBP</i>
Texel	iHS	ENSOARG00000014099	4	104800000	104900000	<i>PRSS37</i>
Texel	iHS	ENSOARG00000014147	4	104800000	104900000	<i>LOC101109961</i>
Texel	iHS	ENSOARG00000014195	2	193500000	193600000	<i>TMEFF2</i>
Texel	iHS	ENSOARG00000014249	4	104800000	104900000	
Texel	iHS	ENSOARG00000014262	4	104800000	104900000	<i>LOC101110500</i>
Texel	iHS	ENSOARG00000014724	1	215600000	215700000	
Texel	iHS	ENSOARG00000014864	1	221800000	221900000	<i>LOC101103029</i>
Texel	iHS	ENSOARG00000014991	2	101900000	1.02e+08	<i>EXTL3</i>
Texel	iHS	ENSOARG00000015111	2	198100000	198200000	<i>PGAP1</i>
Texel	iHS	ENSOARG00000015246	2	198400000	198500000	<i>ANKRD44</i>
Texel	iHS	ENSOARG00000015701	2	199100000	199200000	
Texel	iHS	ENSOARG00000015723	2	199100000	199200000	<i>PLCL1</i>
Texel	iHS	ENSOARG00000015916	3	130600000	130800000	<i>CEP83</i>
Texel	iHS	ENSOARG00000015940	3	130600000	130800000	<i>TMCC3</i>
Texel	iHS	ENSOARG00000016228	3	132100000	132200000	<i>NFE2</i>
Texel	iHS	ENSOARG00000016231	2	201900000	2.02e+08	<i>LOC101104808</i>
Texel	iHS	ENSOARG00000016240	3	132100000	132200000	<i>HNRNPA1</i>
Texel	iHS	ENSOARG00000016251	3	132100000	132200000	<i>CBX5</i>
Texel	iHS	ENSOARG00000016261	3	132100000	132200000	<i>SMUG1</i>
Texel	iHS	ENSOARG00000016352	3	132400000	132500000	<i>HOXC12</i>
Texel	iHS	ENSOARG00000016363	3	132400000	132500000	<i>HOXC13</i>
Texel	iHS	ENSOARG00000016412	3	214600000	214700000	<i>PDGFB</i>
Texel	iHS	ENSOARG00000016650	2	202200000	202400000	<i>NIF3L1</i>
Texel	iHS	ENSOARG00000016665	2	202200000	202400000	<i>ORC2</i>
Texel	iHS	ENSOARG00000016693	3	214900000	2.15e+08	<i>LOC101107085</i>
Texel	iHS	ENSOARG00000016741	2	202200000	202400000	<i>HYCC2</i>
Texel	iHS	ENSOARG00000016775	3	214900000	2.15e+08	<i>ATF4</i>
Texel	iHS	ENSOARG00000016782	2	125800000	125900000	<i>DNAJC10</i>
Texel	iHS	ENSOARG00000016785	3	214900000	2.15e+08	<i>RPS19BP1</i>
Texel	iHS	ENSOARG00000016831	2	202200000	202400000	<i>NDUFB3</i>
Texel	iHS	ENSOARG00000016839	2	202200000	202400000	
Texel	iHS	ENSOARG00000016852	2	202200000	202400000	<i>CFLAR</i>

Texel	iHS	ENSOARG00000016943	2	129800000	129900000	LOC101122080
Texel	iHS	ENSOARG00000016974	3	133700000	133800000	KRT5
Texel	iHS	ENSOARG00000016989	3	133700000	133800000	LOC101112805
Texel	iHS	ENSOARG00000017002	3	133700000	133800000	KRT6A
Texel	iHS	ENSOARG00000017016	3	133700000	133800000	LOC101111178
Texel	iHS	ENSOARG00000017027	3	215200000	215300000	ENTHD1
Texel	iHS	ENSOARG00000017035	3	133700000	133800000	LOC101112555
Texel	iHS	ENSOARG00000017049	3	133700000	133800000	LOC101111440
Texel	iHS	ENSOARG00000017063	3	133700000	133800000	KRT82
Texel	iHS	ENSOARG00000017068	2	202600000	202700000	TRAK2
Texel	iHS	ENSOARG00000017108	3	215200000	215300000	GRAP2
Texel	iHS	ENSOARG00000017141	2	202600000	202700000	STRADB
Texel	iHS	ENSOARG00000018031	3	163600000	163700000	LOC101107184
Texel	iHS	ENSOARG00000018059	3	163600000	163700000	LOC101107433
Texel	iHS	ENSOARG00000018073	3	163600000	163700000	LOC101107691
Texel	iHS	ENSOARG00000018322	4	106800000	106900000	
Texel	iHS	ENSOARG00000018331	2	204800000	2.05e+08	ICOS
Texel	iHS	ENSOARG00000018381	2	205900000	2.06e+08	PARD3B
Texel	iHS	ENSOARG00000019602	2	125800000	125900000	
Texel	iHS	ENSOARG00000019614	2	129100000	129200000	
Texel	iHS	ENSOARG00000019707	1	182400000	182500000	ARHGAP31
Texel	iHS	ENSOARG00000019743	2	201900000	2.02e+08	
Texel	iHS	ENSOARG00000020375	3	214900000	2.15e+08	
Texel	iHS	ENSOARG00000020548	1	199400000	199500000	ETV5
Texel	iHS	ENSOARG00000020551	1	199400000	199500000	
Texel	iHS	ENSOARG00000020552	1	199400000	199500000	TRA2B
Texel	iHS	ENSOARG00000020744	1	213100000	213200000	GHSR
Texel	iHS	ENSOARG00000020748	1	213100000	213200000	FNDC3B
Texel	iHS	ENSOARG00000020756	1	213900000	2.14e+08	PLD1
Texel	iHS	ENSOARG00000020761	1	214400000	214500000	TNIK
Texel	iHS	ENSOARG00000020771	1	214900000	2.15e+08	SLC7A14
Texel	iHS	ENSOARG00000021187	7	78300000	78400000	SUSD6
Texel	iHS	ENSOARG00000021214	3	132400000	132500000	
Texel	iHS	ENSOARG00000021254	3	132400000	132500000	
Texel	iHS	ENSOARG00000021281	2	202200000	202400000	U6
Texel	iHS	ENSOARG00000022162	1	227700000	227800000	7SK
Texel	iHS	ENSOARG00000022982	3	207800000	207900000	LOC114114280
Texel	iHS	ENSOARG00000023057	1	215600000	215700000	U6
Texel	iHS	ENSOARG00000023121	1	215600000	215700000	Telomerase-vert
Texel	iHS	ENSOARG00000023495	3	132400000	132500000	
Texel	iHS	ENSOARG00000023546	1	199400000	199500000	5S_rRNA

Texel	iHS	ENSOARG000000023838	1	210800000	210900000	7SK
Texel	iHS	ENSOARG000000023973	3	213500000	213600000	
Texel	iHS	ENSOARG000000024798	3	207800000	207900000	U6
Texel	iHS	ENSOARG000000025601	1	199400000	199500000	
Texel	iHS	ENSOARG000000025608	1	2.09e+08	209100000	
Texel	iHS	ENSOARG000000025616	1	227700000	227800000	
Texel	iHS	ENSOARG000000025805	2	125800000	125900000	
Texel	iHS	ENSOARG000000025848	2	218400000	218500000	
Texel	iHS	ENSOARG000000026026	3	132100000	132200000	
Texel	iHS	ENSOARG000000026028	3	133700000	133800000	
Texel	iHS	ENSOARG000000026053	3	2.08e+08	208100000	
Texel	iHS	ENSOARG000000026055	3	209200000	209300000	
Texel	iHS	ENSOARG000000026322	10	69700000	69800000	
Texel	iHS	ENSOARG000000026606	6	108700000	108800000	
Texel	iHS	ENSOARG000000027028	8	49200000	49300000	
Vendeen	iHS	ENSOARG000000000237	20	13800000	13900000	DAAM2
Vendeen	iHS	ENSOARG000000000480	20	13800000	13900000	MOCS1
Vendeen	iHS	ENSOARG000000000524	13	21800000	21900000	SKIDA1
Vendeen	iHS	ENSOARG000000000698	13	21800000	21900000	MLLT10
Vendeen	iHS	ENSOARG000000001045	13	22100000	22200000	DNAJC1
Vendeen	iHS	ENSOARG000000001332	8	66600000	66700000	VTA1
Vendeen	iHS	ENSOARG000000001528	1	19700000	19800000	MUTYH
Vendeen	iHS	ENSOARG000000001561	1	19700000	19800000	TOE1
Vendeen	iHS	ENSOARG000000001642	1	19700000	19800000	TESK2
Vendeen	iHS	ENSOARG000000002952	1	103400000	103500000	ADAR
Vendeen	iHS	ENSOARG000000002973	1	103400000	103500000	KCNN3
Vendeen	iHS	ENSOARG000000003495	9	46400000	46500000	SLCO5A1
Vendeen	iHS	ENSOARG000000004305	1	2.5e+07	25100000	FAF1
Vendeen	iHS	ENSOARG000000004483	13	21800000	21900000	
Vendeen	iHS	ENSOARG000000005036	9	19400000	19500000	KHDRBS3
Vendeen	iHS	ENSOARG000000006458	16	14700000	14800000	CWC27
Vendeen	iHS	ENSOARG000000006486	16	14700000	14800000	SREK1IP1
Vendeen	iHS	ENSOARG000000006542	16	14700000	14800000	SHISAL2B
Vendeen	iHS	ENSOARG000000006823	10	11500000	11600000	LOC101122608
Vendeen	iHS	ENSOARG000000006858	10	11500000	11600000	ELF1
Vendeen	iHS	ENSOARG000000006892	10	84600000	84700000	CARS2
Vendeen	iHS	ENSOARG000000007020	10	84600000	84700000	ING1
Vendeen	iHS	ENSOARG000000007048	10	84600000	84700000	ANKRD10
Vendeen	iHS	ENSOARG000000007225	16	20600000	20700000	RAB3C
Vendeen	iHS	ENSOARG000000007467	13	52600000	52700000	
Vendeen	iHS	ENSOARG000000007511	2	21600000	21700000	ALDOB

Vendeen	iHS	ENSOARG00000007528	2	21600000	21700000	ZNF189
Vendeen	iHS	ENSOARG00000007538	2	21600000	21700000	MRPL50
Vendeen	iHS	ENSOARG00000007558	21	21500000	21600000	GAS2
Vendeen	iHS	ENSOARG00000007616	21	21500000	21600000	
Vendeen	iHS	ENSOARG00000007875	6	95600000	95700000	
Vendeen	iHS	ENSOARG00000008069	15	39500000	39600000	TEAD1
Vendeen	iHS	ENSOARG00000008112	8	15400000	15500000	CLVS2
Vendeen	iHS	ENSOARG00000009678	26	20300000	20400000	TUSC3
Vendeen	iHS	ENSOARG00000009879	1	19700000	19800000	HPDL
Vendeen	iHS	ENSOARG00000009938	2	1.66e+08	166100000	KYNU
Vendeen	iHS	ENSOARG00000011027	2	174500000	174600000	RAB3GAP1
Vendeen	iHS	ENSOARG00000011104	2	174500000	174600000	
Vendeen	iHS	ENSOARG00000011525	12	19500000	19600000	SPATA17
Vendeen	iHS	ENSOARG00000011531	12	19900000	2.00E+07	RRP15
Vendeen	iHS	ENSOARG00000011583	12	19900000	2.00E+07	TGFB2
Vendeen	iHS	ENSOARG00000012281	17	16800000	16900000	ELMOD2
Vendeen	iHS	ENSOARG00000012378	6	86400000	86500000	SLC4A4
Vendeen	iHS	ENSOARG00000012380	17	16800000	16900000	TBC1D9
Vendeen	iHS	ENSOARG00000012419	2	183600000	183700000	
Vendeen	iHS	ENSOARG00000012490	2	183600000	183700000	
Vendeen	iHS	ENSOARG00000012510	17	16800000	16900000	UCP1
Vendeen	iHS	ENSOARG00000012558	17	16800000	16900000	MGAT4D
Vendeen	iHS	ENSOARG00000013094	6	8.7e+07	87100000	
Vendeen	iHS	ENSOARG00000013204	6	8.7e+07	87100000	ADAMTS3
Vendeen	iHS	ENSOARG00000014052	13	14900000	1.5e+07	CELF2
Vendeen	iHS	ENSOARG00000014580	3	170200000	170300000	
Vendeen	iHS	ENSOARG00000014722	3	170200000	170300000	UTP20
Vendeen	iHS	ENSOARG00000015089	3	116100000	116200000	OTOGL
Vendeen	iHS	ENSOARG00000016548	20	13100000	13200000	KCNK5
Vendeen	iHS	ENSOARG00000016671	22	13400000	13500000	CPEB3
Vendeen	iHS	ENSOARG00000016880	3	27100000	27200000	OSR1
Vendeen	iHS	ENSOARG00000017887	14	21500000	21600000	RPGRIP1L
Vendeen	iHS	ENSOARG00000017913	7	12100000	12200000	IGDCC4
Vendeen	iHS	ENSOARG00000017939	14	21500000	21600000	FTO
Vendeen	iHS	ENSOARG00000017941	7	12100000	12200000	DPP8
Vendeen	iHS	ENSOARG00000018930	7	18900000	1.9e+07	HEXA
Vendeen	iHS	ENSOARG00000018941	7	18900000	1.9e+07	TMEM202
Vendeen	iHS	ENSOARG00000018949	7	18900000	1.9e+07	
Vendeen	iHS	ENSOARG00000019073	6	95600000	95700000	PRKG2
Vendeen	iHS	ENSOARG00000019206	1	175100000	175200000	PHLDB2
Vendeen	iHS	ENSOARG00000019221	1	175100000	175200000	TAGLN3

Vendeen	iHS	ENSOARG000000019233	1	175100000	175200000	
Vendeen	iHS	ENSOARG000000019238	1	175100000	175200000	<i>TMPRSS7</i>
Vendeen	iHS	ENSOARG000000019836	2	220100000	220200000	<i>CNPPD1</i>
Vendeen	iHS	ENSOARG000000019847	2	174500000	174600000	
Vendeen	iHS	ENSOARG000000019867	2	220100000	220200000	<i>RETREG2</i>
Vendeen	iHS	ENSOARG000000019885	2	220100000	220200000	<i>ZFAND2B</i>
Vendeen	iHS	ENSOARG000000019920	2	220100000	220200000	<i>ABCB6</i>
Vendeen	iHS	ENSOARG000000019940	2	220100000	220200000	<i>ATG9A</i>
Vendeen	iHS	ENSOARG000000019955	2	220100000	220200000	<i>ANKZF1</i>
Vendeen	iHS	ENSOARG000000019976	2	220100000	220200000	<i>GLB1L</i>
Vendeen	iHS	ENSOARG000000020016	2	220100000	220200000	<i>STK16</i>
Vendeen	iHS	ENSOARG000000020020	2	220100000	220200000	<i>TUBA4A</i>
Vendeen	iHS	ENSOARG000000020032	2	220100000	220200000	<i>LOC101116286</i>
Vendeen	iHS	ENSOARG000000020167	1	185400000	185500000	<i>SLC49A4</i>
Vendeen	iHS	ENSOARG000000020679	7	40800000	40900000	<i>ABHD12B</i>
Vendeen	iHS	ENSOARG000000020686	7	40800000	40900000	<i>PYGL</i>
Vendeen	iHS	ENSOARG000000020732	1	212500000	212600000	<i>SPATA16</i>
Vendeen	iHS	ENSOARG000000021973	20	13100000	13200000	
Vendeen	iHS	ENSOARG000000022321	22	13400000	13500000	
Vendeen	iHS	ENSOARG000000022713	18	15400000	15500000	
Vendeen	iHS	ENSOARG000000023001	3	170200000	170300000	<i>5S_rRNA</i>
Vendeen	iHS	ENSOARG000000023128	14	21500000	21600000	
Vendeen	iHS	ENSOARG000000023690	3	27100000	27200000	<i>7SK</i>
Vendeen	iHS	ENSOARG000000024336	10	11500000	11600000	
Vendeen	iHS	ENSOARG000000024981	12	19900000	2.00E+07	<i>U6</i>
Vendeen	iHS	ENSOARG000000025172	16	14700000	14800000	
Vendeen	iHS	ENSOARG000000025654	17	1.2e+07	12100000	
Belclare	Tajimas'D	ENSOARG000000000318	11	27400000	27500000	<i>PFAS</i>
Belclare	Tajimas'D	ENSOARG000000000380	11	27400000	27500000	
Belclare	Tajimas'D	ENSOARG000000000523	11	27400000	27500000	<i>RANGRF</i>
Belclare	Tajimas'D	ENSOARG000000000540	3	205300000	205400000	<i>LOC101104482</i>
Belclare	Tajimas'D	ENSOARG000000000563	10	68600000	68700000	
Belclare	Tajimas'D	ENSOARG000000000669	11	27400000	27500000	<i>SLC25A35</i>
Belclare	Tajimas'D	ENSOARG000000000848	11	27400000	27500000	<i>ARHGEF15</i>
Belclare	Tajimas'D	ENSOARG000000001043	7	76400000	76500000	<i>LOC101115543</i>
Belclare	Tajimas'D	ENSOARG000000001123	15	72200000	72300000	<i>ALKBH3</i>
Belclare	Tajimas'D	ENSOARG000000001134	4	88400000	88500000	
Belclare	Tajimas'D	ENSOARG000000001874	8	68900000	6.9e+07	<i>UTRN</i>
Belclare	Tajimas'D	ENSOARG000000002617	8	68400000	68500000	<i>SF3B5</i>
Belclare	Tajimas'D	ENSOARG000000002844	15	1500000	1600000	<i>GRIA4</i>
Belclare	Tajimas'D	ENSOARG000000003270	16	2300000	2400000	<i>KCNMB1</i>

Belclare	Tajimas'D	ENSOARG00000003274	9	78600000	78700000	<i>NIPAL2</i>
Belclare	Tajimas'D	ENSOARG00000003457	9	78600000	78700000	<i>POP1</i>
Belclare	Tajimas'D	ENSOARG00000004018	5	56800000	56900000	<i>SPINK5</i>
Belclare	Tajimas'D	ENSOARG00000004106	8	77600000	77700000	<i>CNKS3R3</i>
Belclare	Tajimas'D	ENSOARG00000004269	26	38600000	38700000	<i>TOP2B</i>
Belclare	Tajimas'D	ENSOARG00000004373	26	38600000	38700000	<i>RARB</i>
Belclare	Tajimas'D	ENSOARG00000004431	2	141100000	141200000	<i>LOC101108995</i>
Belclare	Tajimas'D	ENSOARG00000004646	5	2400000	2500000	<i>TRIM17</i>
Belclare	Tajimas'D	ENSOARG00000005135	24	6500000	6600000	
Belclare	Tajimas'D	ENSOARG00000005438	5	2400000	2500000	<i>OBSCN</i>
Belclare	Tajimas'D	ENSOARG00000006078	2	9500000	9600000	<i>COL27A1</i>
Belclare	Tajimas'D	ENSOARG00000006114	2	9500000	9600000	<i>KIF12</i>
Belclare	Tajimas'D	ENSOARG00000006134	2	9500000	9600000	<i>AMBP</i>
Belclare	Tajimas'D	ENSOARG00000006218	5	2600000	2700000	
Belclare	Tajimas'D	ENSOARG00000006226	5	2600000	2700000	<i>GJC2</i>
Belclare	Tajimas'D	ENSOARG00000006259	5	2600000	2700000	
Belclare	Tajimas'D	ENSOARG00000006369	5	2600000	2700000	<i>MRPL55</i>
Belclare	Tajimas'D	ENSOARG00000006434	5	2600000	2700000	<i>C5H1orf35</i>
Belclare	Tajimas'D	ENSOARG00000006462	14	48700000	48800000	
Belclare	Tajimas'D	ENSOARG00000006508	14	48700000	48800000	<i>TTC9B</i>
Belclare	Tajimas'D	ENSOARG00000006516	14	48700000	48800000	<i>CCNP</i>
Belclare	Tajimas'D	ENSOARG00000006526	14	48700000	48800000	<i>AKT2</i>
Belclare	Tajimas'D	ENSOARG00000006588	14	48700000	48800000	
Belclare	Tajimas'D	ENSOARG00000006602	10	6700000	6800000	
Belclare	Tajimas'D	ENSOARG00000006641	10	7400000	7500000	
Belclare	Tajimas'D	ENSOARG00000006756	12	41700000	41800000	<i>NMNAT1</i>
Belclare	Tajimas'D	ENSOARG00000006851	12	41700000	41800000	<i>LZIC</i>
Belclare	Tajimas'D	ENSOARG00000007003	17	8300000	8400000	
Belclare	Tajimas'D	ENSOARG00000007130	12	41700000	41800000	<i>CLSTN1</i>
Belclare	Tajimas'D	ENSOARG00000007763	4	22200000	22300000	<i>ETV1</i>
Belclare	Tajimas'D	ENSOARG00000008012	2	27800000	27900000	<i>PHF2</i>
Belclare	Tajimas'D	ENSOARG00000008029	2	27800000	27900000	
Belclare	Tajimas'D	ENSOARG00000008048	2	27800000	27900000	<i>FAM120A</i>
Belclare	Tajimas'D	ENSOARG00000008191	18	46300000	46400000	<i>MIPOL1</i>
Belclare	Tajimas'D	ENSOARG00000008618	25	30000000	30100000	<i>ADK</i>
Belclare	Tajimas'D	ENSOARG00000008628	25	30000000	30100000	
Belclare	Tajimas'D	ENSOARG00000008677	25	30600000	30700000	<i>KAT6B</i>
Belclare	Tajimas'D	ENSOARG00000008710	2	244400000	244500000	
Belclare	Tajimas'D	ENSOARG00000008724	25	30600000	30700000	<i>DUSP29</i>
Belclare	Tajimas'D	ENSOARG00000009274	18	3200000	3300000	
Belclare	Tajimas'D	ENSOARG00000009302	18	3200000	3300000	<i>GABRA5</i>

Belclare	Tajimas'D	ENSOARG00000009427	2	116400000	116500000	GLRX
Belclare	Tajimas'D	ENSOARG00000009456	22	29700000	29800000	MXI1
Belclare	Tajimas'D	ENSOARG00000010108	3	87400000	87500000	FEZ2
Belclare	Tajimas'D	ENSOARG00000010127	3	87400000	87500000	CRIM1
Belclare	Tajimas'D	ENSOARG00000010187	16	36600000	36700000	WDR70
Belclare	Tajimas'D	ENSOARG00000010216	21	26600000	26700000	
Belclare	Tajimas'D	ENSOARG00000010219	21	26600000	26700000	
Belclare	Tajimas'D	ENSOARG00000010248	21	26600000	26700000	
Belclare	Tajimas'D	ENSOARG00000010344	3	90400000	90500000	LTBP1
Belclare	Tajimas'D	ENSOARG00000010483	9	60400000	60500000	UTP23
Belclare	Tajimas'D	ENSOARG00000010674	9	60400000	60500000	EIF3H
Belclare	Tajimas'D	ENSOARG00000010748	15	72200000	72300000	
Belclare	Tajimas'D	ENSOARG00000010897	12	35500000	35600000	SELL
Belclare	Tajimas'D	ENSOARG00000011075	12	35500000	35600000	SELE
Belclare	Tajimas'D	ENSOARG00000011107	13	53500000	53600000	KCNQ2
Belclare	Tajimas'D	ENSOARG00000011195	13	53500000	53600000	CHRNA4
Belclare	Tajimas'D	ENSOARG00000011265	13	53500000	53600000	
Belclare	Tajimas'D	ENSOARG00000011406	13	53500000	53600000	LOC101112800
Belclare	Tajimas'D	ENSOARG00000011620	13	9200000	9300000	
Belclare	Tajimas'D	ENSOARG00000012024	1	46300000	46400000	
Belclare	Tajimas'D	ENSOARG00000012287	12	71300000	71400000	SYT14
Belclare	Tajimas'D	ENSOARG00000012435	10	32300000	32400000	
Belclare	Tajimas'D	ENSOARG00000012459	10	32300000	32400000	
Belclare	Tajimas'D	ENSOARG00000013313	4	900000	1.00E+06	
Belclare	Tajimas'D	ENSOARG00000013495	4	2400000	2500000	
Belclare	Tajimas'D	ENSOARG00000014058	1	61200000	61300000	LPAR3
Belclare	Tajimas'D	ENSOARG00000014066	20	24400000	24500000	IL17F
Belclare	Tajimas'D	ENSOARG00000014143	20	24400000	24500000	MCM3
Belclare	Tajimas'D	ENSOARG00000014210	21	35200000	35300000	TMEM45B
Belclare	Tajimas'D	ENSOARG00000014310	21	35200000	35300000	NFRKB
Belclare	Tajimas'D	ENSOARG00000014352	5	57700000	57800000	ADRB2
Belclare	Tajimas'D	ENSOARG00000014361	16	63500000	63600000	SEMA5A
Belclare	Tajimas'D	ENSOARG00000014465	2	91300000	91400000	ELAVL2
Belclare	Tajimas'D	ENSOARG00000014507	21	35200000	35300000	PRDM10
Belclare	Tajimas'D	ENSOARG00000014716	3	108600000	108700000	TRHDE
Belclare	Tajimas'D	ENSOARG00000015029	10	43100000	43200000	
Belclare	Tajimas'D	ENSOARG00000015071	10	43100000	43200000	
Belclare	Tajimas'D	ENSOARG00000015209	10	46700000	46800000	DACH1
Belclare	Tajimas'D	ENSOARG00000015490	21	26600000	26700000	LOC101103194
Belclare	Tajimas'D	ENSOARG00000015530	19	46100000	46200000	CACNA2D3
Belclare	Tajimas'D	ENSOARG00000015531	3	124300000	124400000	CEP290

Belclare	Tajimas'D	ENSOARG00000015575	3	124300000	124400000	<i>TMTC3</i>
Belclare	Tajimas'D	ENSOARG00000015985	2	116400000	116500000	<i>AMMECR1L</i>
Belclare	Tajimas'D	ENSOARG00000015995	2	116400000	116500000	<i>POLR2D</i>
Belclare	Tajimas'D	ENSOARG00000016015	2	116600000	116700000	<i>WDR33</i>
Belclare	Tajimas'D	ENSOARG00000016097	2	116900000	1.17e+08	<i>IWS1</i>
Belclare	Tajimas'D	ENSOARG00000016105	2	116900000	1.17e+08	
Belclare	Tajimas'D	ENSOARG00000016171	3	77400000	77500000	<i>SOCS5</i>
Belclare	Tajimas'D	ENSOARG00000016185	19	8000000	8100000	<i>PDCD6IP</i>
Belclare	Tajimas'D	ENSOARG00000016200	19	47300000	47400000	<i>CACNA1D</i>
Belclare	Tajimas'D	ENSOARG00000016229	2	117600000	117700000	<i>NEMP2</i>
Belclare	Tajimas'D	ENSOARG00000016246	2	117600000	117700000	<i>MFSD6</i>
Belclare	Tajimas'D	ENSOARG00000016250	1	141100000	141200000	<i>HSPA13</i>
Belclare	Tajimas'D	ENSOARG00000016305	10	52700000	52800000	<i>MYCBP2</i>
Belclare	Tajimas'D	ENSOARG00000016421	5	13500000	13600000	
Belclare	Tajimas'D	ENSOARG00000016596	3	25700000	25800000	<i>SMC6</i>
Belclare	Tajimas'D	ENSOARG00000016671	22	13400000	13500000	<i>CPEB3</i>
Belclare	Tajimas'D	ENSOARG00000016675	2	122400000	122500000	<i>FSIP2</i>
Belclare	Tajimas'D	ENSOARG00000016702	3	25700000	25800000	<i>GEN1</i>
Belclare	Tajimas'D	ENSOARG00000016782	2	125900000	1.26e+08	<i>DNAJC10</i>
Belclare	Tajimas'D	ENSOARG00000016924	2	129400000	129700000	<i>ZNF385B</i>
Belclare	Tajimas'D	ENSOARG00000017378	2	131200000	131300000	<i>PDE11A</i>
Belclare	Tajimas'D	ENSOARG00000017403	2	131500000	131700000	<i>AGPS</i>
Belclare	Tajimas'D	ENSOARG00000017408	1	71100000	71200000	<i>SLC44A3</i>
Belclare	Tajimas'D	ENSOARG00000017424	1	71100000	71200000	<i>CNN3</i>
Belclare	Tajimas'D	ENSOARG00000018113	7	12600000	12700000	<i>MEGF11</i>
Belclare	Tajimas'D	ENSOARG00000018254	6	92900000	9.3e+07	<i>FRAS1</i>
Belclare	Tajimas'D	ENSOARG00000018381	2	205900000	2.06e+08	<i>PARD3B</i>
Belclare	Tajimas'D	ENSOARG00000018464	5	13500000	13600000	<i>ELAVL3</i>
Belclare	Tajimas'D	ENSOARG00000018502	5	13500000	13600000	
Belclare	Tajimas'D	ENSOARG00000018564	5	13500000	13600000	<i>ECSIT</i>
Belclare	Tajimas'D	ENSOARG00000018621	5	13500000	13600000	<i>CNN1</i>
Belclare	Tajimas'D	ENSOARG00000018644	5	13500000	13600000	<i>ELOF1</i>
Belclare	Tajimas'D	ENSOARG00000018673	5	13500000	13600000	<i>ACP5</i>
Belclare	Tajimas'D	ENSOARG00000018710	6	92900000	9.3e+07	<i>ANXA3</i>
Belclare	Tajimas'D	ENSOARG00000019052	11	27400000	27500000	<i>AURKB</i>
Belclare	Tajimas'D	ENSOARG00000019110	11	27400000	27500000	<i>CTC1</i>
Belclare	Tajimas'D	ENSOARG00000019358	3	34400000	34500000	<i>FNDC4</i>
Belclare	Tajimas'D	ENSOARG00000019373	3	34400000	34500000	
Belclare	Tajimas'D	ENSOARG00000019376	3	34400000	34500000	
Belclare	Tajimas'D	ENSOARG00000019385	3	34400000	34500000	<i>ZNF512</i>
Belclare	Tajimas'D	ENSOARG00000019394	1	176400000	176500000	<i>CFAP44</i>

Belclare	Tajimas'D	ENSOARG00000019577	2	116600000	116700000	<i>SFT2D3</i>
Belclare	Tajimas'D	ENSOARG00000019733	1	89200000	89300000	<i>MOV10</i>
Belclare	Tajimas'D	ENSOARG00000019749	1	89200000	89300000	<i>RHOC</i>
Belclare	Tajimas'D	ENSOARG00000019763	1	89200000	89300000	
Belclare	Tajimas'D	ENSOARG00000020326	1	15300000	15400000	<i>CTPS1</i>
Belclare	Tajimas'D	ENSOARG00000020331	1	15300000	15400000	
Belclare	Tajimas'D	ENSOARG00000020350	1	15300000	15400000	<i>SCMH1</i>
Belclare	Tajimas'D	ENSOARG00000020459	1	194600000	194700000	<i>GMNC</i>
Belclare	Tajimas'D	ENSOARG00000020594	3	198500000	198600000	<i>SLC15A5</i>
Belclare	Tajimas'D	ENSOARG00000020833	7	48000000	48100000	<i>MYO1E</i>
Belclare	Tajimas'D	ENSOARG00000021090	3	205300000	205400000	<i>LOC101122683</i>
Belclare	Tajimas'D	ENSOARG00000021170	7	76400000	76500000	<i>ARG2</i>
Belclare	Tajimas'D	ENSOARG00000021171	7	76400000	76500000	<i>VTI1B</i>
Belclare	Tajimas'D	ENSOARG00000021172	7	76400000	76500000	<i>RDH11</i>
Belclare	Tajimas'D	ENSOARG00000021173	7	76400000	76500000	<i>RDH12</i>
Belclare	Tajimas'D	ENSOARG00000021287	1	204900000	2.05e+08	
Belclare	Tajimas'D	ENSOARG00000021642	18	42200000	42300000	
Belclare	Tajimas'D	ENSOARG00000021860	8	68400000	68500000	<i>5S</i>
Belclare	Tajimas'D	ENSOARG00000021968	5	90000000	90100000	
Belclare	Tajimas'D	ENSOARG00000022118	3	46300000	46400000	<i>LOC114114156</i>
Belclare	Tajimas'D	ENSOARG00000022321	22	13400000	13500000	
Belclare	Tajimas'D	ENSOARG00000022371	2	141100000	141200000	
Belclare	Tajimas'D	ENSOARG00000022762	7	12600000	12700000	<i>U6</i>
Belclare	Tajimas'D	ENSOARG00000022808	26	38600000	38700000	
Belclare	Tajimas'D	ENSOARG00000023232	26	38600000	38700000	
Belclare	Tajimas'D	ENSOARG00000024622	22	29700000	29800000	<i>7SK</i>
Belclare	Tajimas'D	ENSOARG00000024701	7	76400000	76500000	<i>U6</i>
Belclare	Tajimas'D	ENSOARG00000025000	3	205300000	205400000	<i>LOC114114192</i>
Belclare	Tajimas'D	ENSOARG00000025209	4	2400000	2500000	
Belclare	Tajimas'D	ENSOARG00000025278	5	2400000	2500000	
Belclare	Tajimas'D	ENSOARG00000025280	5	2400000	2500000	
Belclare	Tajimas'D	ENSOARG00000025313	5	57700000	57800000	
Belclare	Tajimas'D	ENSOARG00000025526	1	59800000	59900000	
Belclare	Tajimas'D	ENSOARG00000025527	1	59800000	59900000	
Belclare	Tajimas'D	ENSOARG00000025657	17	16100000	16200000	
Belclare	Tajimas'D	ENSOARG00000025972	3	46300000	46400000	
Belclare	Tajimas'D	ENSOARG00000026232	13	43400000	43500000	
Belclare	Tajimas'D	ENSOARG00000026239	13	49200000	49300000	
Belclare	Tajimas'D	ENSOARG00000026926	14	48700000	48800000	
Belclare	Tajimas'D	ENSOARG00000026981	16	66700000	66800000	
Charollais	Tajimas'D	ENSOARG00000000233	2	134000000	134100000	<i>CHN1</i>

Charollais Tajimas'D	ENSOARG00000001126	15	49200000	49300000	LOC101123408
Charollais Tajimas'D	ENSOARG00000001301	15	49200000	49300000	RRM1
Charollais Tajimas'D	ENSOARG00000002106	17	67200000	67300000	TTC28
Charollais Tajimas'D	ENSOARG00000002389	3	206300000	206400000	FOXJ2
Charollais Tajimas'D	ENSOARG00000002497	3	206300000	206400000	NECAP1
Charollais Tajimas'D	ENSOARG00000002516	3	206300000	206400000	CLEC4A
Charollais Tajimas'D	ENSOARG00000002597	13	69600000	69700000	
Charollais Tajimas'D	ENSOARG00000003416	2	238700000	238800000	WASF2
Charollais Tajimas'D	ENSOARG00000003527	2	238700000	238800000	CD164L2
Charollais Tajimas'D	ENSOARG00000003550	2	238700000	238800000	MAP3K6
Charollais Tajimas'D	ENSOARG00000003670	25	31000000	31100000	
Charollais Tajimas'D	ENSOARG00000003753	3	70000000	70100000	PSME4
Charollais Tajimas'D	ENSOARG00000003973	21	6500000	6600000	
Charollais Tajimas'D	ENSOARG00000004086	25	14100000	14200000	BICC1
Charollais Tajimas'D	ENSOARG00000004139	11	13900000	1.4e+07	LOC101114032
Charollais Tajimas'D	ENSOARG00000004202	11	13900000	1.4e+07	LOC101110777
Charollais Tajimas'D	ENSOARG00000004253	11	13900000	1.4e+07	LOC101114285
Charollais Tajimas'D	ENSOARG00000004349	11	29200000	29300000	LOC780463
Charollais Tajimas'D	ENSOARG00000004367	11	13900000	1.4e+07	LOC101114535
Charollais Tajimas'D	ENSOARG00000004500	4	47300000	47400000	NAMPT
Charollais Tajimas'D	ENSOARG00000004627	11	13900000	1.4e+07	LOC101111035
Charollais Tajimas'D	ENSOARG00000004657	11	13900000	1.4e+07	LOC101111303
Charollais Tajimas'D	ENSOARG00000004737	9	79900000	8.00E+07	CPQ
Charollais Tajimas'D	ENSOARG00000004781	8	83600000	83700000	
Charollais Tajimas'D	ENSOARG00000005249	23	16900000	1.7e+07	
Charollais Tajimas'D	ENSOARG00000005872	23	23800000	23900000	ASXL3
Charollais Tajimas'D	ENSOARG00000006164	6	44300000	44400000	CCDC149
Charollais Tajimas'D	ENSOARG00000006696	15	49200000	49300000	LOC101123149
Charollais Tajimas'D	ENSOARG00000006819	4	116700000	116800000	RBM33
Charollais Tajimas'D	ENSOARG00000008491	2	29700000	29800000	SLC35D2
Charollais Tajimas'D	ENSOARG00000008514	2	29700000	29800000	HSD17B3
Charollais Tajimas'D	ENSOARG00000008710	2	244400000	244500000	
Charollais Tajimas'D	ENSOARG00000008952	16	33000000	33100000	
Charollais Tajimas'D	ENSOARG00000009025	25	31000000	31100000	
Charollais Tajimas'D	ENSOARG00000009178	1	256300000	256400000	CPNE4
Charollais Tajimas'D	ENSOARG00000009409	4	26400000	26500000	SNX13
Charollais Tajimas'D	ENSOARG00000009448	1	257200000	257300000	
Charollais Tajimas'D	ENSOARG00000010129	1	259500000	259600000	BACE2
Charollais Tajimas'D	ENSOARG00000010158	1	259500000	259600000	
Charollais Tajimas'D	ENSOARG00000010187	16	36600000	36700000	WDR70
Charollais Tajimas'D	ENSOARG00000010216	21	26600000	26700000	

Charollais	Tajimas'D	ENSOARG00000010219	21	26600000	26700000	
Charollais	Tajimas'D	ENSOARG00000010248	21	26600000	26700000	
Charollais	Tajimas'D	ENSOARG00000010709	8	28400000	28500000	ARMC2
Charollais	Tajimas'D	ENSOARG00000010926	1	261100000	261200000	WDR4
Charollais	Tajimas'D	ENSOARG00000010984	1	261100000	261200000	PDE9A
Charollais	Tajimas'D	ENSOARG00000011030	1	261100000	261200000	NDUFV3
Charollais	Tajimas'D	ENSOARG00000011128	1	261300000	261400000	CBS
Charollais	Tajimas'D	ENSOARG00000011162	1	261300000	261400000	
Charollais	Tajimas'D	ENSOARG00000011186	1	261300000	261400000	CRYAA
Charollais	Tajimas'D	ENSOARG00000011738	1	262300000	262400000	ICOSLG
Charollais	Tajimas'D	ENSOARG00000011773	1	262300000	262400000	DNMT3L
Charollais	Tajimas'D	ENSOARG00000011819	1	262300000	262400000	AIRE
Charollais	Tajimas'D	ENSOARG00000011822	19	39100000	39200000	
Charollais	Tajimas'D	ENSOARG00000012103	9	5200000	5300000	ADGRB3
Charollais	Tajimas'D	ENSOARG00000012320	9	12600000	12700000	
Charollais	Tajimas'D	ENSOARG00000012978	5	68100000	68200000	RNF145
Charollais	Tajimas'D	ENSOARG00000013061	5	68100000	68200000	UBLCP1
Charollais	Tajimas'D	ENSOARG00000013093	2	67700000	67800000	TMEM252
Charollais	Tajimas'D	ENSOARG00000013106	2	67700000	67800000	PGM5
Charollais	Tajimas'D	ENSOARG00000013216	22	4400000	4500000	PCDH15
Charollais	Tajimas'D	ENSOARG00000013879	24	18800000	18900000	DNAH3
Charollais	Tajimas'D	ENSOARG00000014183	2	193100000	193200000	CAVIN2
Charollais	Tajimas'D	ENSOARG00000014365	24	18800000	18900000	
Charollais	Tajimas'D	ENSOARG00000014558	3	107500000	107600000	LGR5
Charollais	Tajimas'D	ENSOARG00000014589	3	107500000	107600000	ZFC3H1
Charollais	Tajimas'D	ENSOARG00000014673	11	29200000	29300000	LOC101113508
Charollais	Tajimas'D	ENSOARG00000014730	11	29200000	29300000	ADPRM
Charollais	Tajimas'D	ENSOARG00000014755	11	29200000	29300000	
Charollais	Tajimas'D	ENSOARG00000015285	3	118700000	118800000	TMTC2
Charollais	Tajimas'D	ENSOARG00000015375	19	45000000	45100000	ERC2
Charollais	Tajimas'D	ENSOARG00000015490	21	26600000	26700000	LOC101103194
Charollais	Tajimas'D	ENSOARG00000015507	3	19700000	19800000	NOL10
Charollais	Tajimas'D	ENSOARG00000015588	3	19700000	19800000	ATP6V1C2
Charollais	Tajimas'D	ENSOARG00000015676	3	19700000	19800000	PDIA6
Charollais	Tajimas'D	ENSOARG00000015978	5	84400000	84500000	
Charollais	Tajimas'D	ENSOARG00000016413	3	132800000	132900000	ATF7
Charollais	Tajimas'D	ENSOARG00000016425	3	132800000	132900000	NPFF
Charollais	Tajimas'D	ENSOARG00000016437	3	132800000	132900000	TARBP2
Charollais	Tajimas'D	ENSOARG00000016453	3	132800000	132900000	MAP3K12
Charollais	Tajimas'D	ENSOARG00000016466	3	132800000	132900000	PCBP2
Charollais	Tajimas'D	ENSOARG00000016633	2	122300000	122400000	

Charollais Tajimas'D	ENSOARG00000016659	15	45800000	45900000	<i>DCHS1</i>
Charollais Tajimas'D	ENSOARG00000016970	15	45800000	45900000	<i>TPP1</i>
Charollais Tajimas'D	ENSOARG00000017185	15	45800000	45900000	<i>TAF10</i>
Charollais Tajimas'D	ENSOARG00000017244	13	57400000	57500000	<i>ANKRD60</i>
Charollais Tajimas'D	ENSOARG00000017258	15	45800000	45900000	<i>ILK</i>
Charollais Tajimas'D	ENSOARG00000017326	13	57400000	57500000	<i>C13H20orf85</i>
Charollais Tajimas'D	ENSOARG00000017435	15	45800000	45900000	<i>RRP8</i>
Charollais Tajimas'D	ENSOARG00000017865	15	45800000	45900000	<i>DNHD1</i>
Charollais Tajimas'D	ENSOARG00000018199	4	106400000	106500000	<i>TCAF2</i>
Charollais Tajimas'D	ENSOARG00000018237	4	106400000	106500000	<i>TCAF1</i>
Charollais Tajimas'D	ENSOARG00000018373	3	178600000	178700000	<i>HMGXB4</i>
Charollais Tajimas'D	ENSOARG00000018432	3	178600000	178700000	<i>TOM1</i>
Charollais Tajimas'D	ENSOARG00000018475	3	178600000	178700000	
Charollais Tajimas'D	ENSOARG00000018527	3	178600000	178700000	<i>MCM5</i>
Charollais Tajimas'D	ENSOARG00000019097	15	65300000	65400000	<i>IFTAP</i>
Charollais Tajimas'D	ENSOARG00000019884	3	146000000	146100000	<i>CNTN1</i>
Charollais Tajimas'D	ENSOARG00000020051	2	220200000	220300000	<i>DNAJB2</i>
Charollais Tajimas'D	ENSOARG00000020084	2	220200000	220300000	<i>PTPRN</i>
Charollais Tajimas'D	ENSOARG00000020097	3	45000000	45100000	<i>OTX1</i>
Charollais Tajimas'D	ENSOARG00000020108	3	45000000	45100000	<i>EHBP1</i>
Charollais Tajimas'D	ENSOARG00000020122	2	220200000	220300000	
Charollais Tajimas'D	ENSOARG00000020148	2	220200000	220300000	<i>RESP18</i>
Charollais Tajimas'D	ENSOARG00000020161	2	220200000	220300000	<i>DNPEP</i>
Charollais Tajimas'D	ENSOARG00000020167	1	185400000	185500000	<i>SLC49A4</i>
Charollais Tajimas'D	ENSOARG00000020341	3	206300000	206400000	<i>C3AR1</i>
Charollais Tajimas'D	ENSOARG00000020459	1	194600000	194700000	<i>GMNC</i>
Charollais Tajimas'D	ENSOARG00000020496	3	195300000	195400000	<i>PLEKHA5</i>
Charollais Tajimas'D	ENSOARG00000020976	7	56000000	56100000	<i>GLDN</i>
Charollais Tajimas'D	ENSOARG00000021131	7	70000000	70100000	<i>MNAT1</i>
Charollais Tajimas'D	ENSOARG00000021132	7	70000000	70100000	<i>TRMT5</i>
Charollais Tajimas'D	ENSOARG00000021133	7	70000000	70100000	<i>SLC38A6</i>
Charollais Tajimas'D	ENSOARG00000021367	5	46200000	46300000	<i>LOC114115039</i>
Charollais Tajimas'D	ENSOARG00000021531	9	72500000	72600000	<i>LOC114116497</i>
Charollais Tajimas'D	ENSOARG00000021643	2	214700000	214800000	<i>LOC114113422</i>
Charollais Tajimas'D	ENSOARG00000021880	13	69600000	69700000	
Charollais Tajimas'D	ENSOARG00000022190	2	220200000	220300000	<i>LOC114111283</i>
Charollais Tajimas'D	ENSOARG00000022244	2	220200000	220300000	<i>SNORD39</i>
Charollais Tajimas'D	ENSOARG00000022387	2	238700000	238800000	<i>U6</i>
Charollais Tajimas'D	ENSOARG00000022859	2	91800000	91900000	<i>LOC114113334</i>
Charollais Tajimas'D	ENSOARG00000022972	2	220200000	220300000	
Charollais Tajimas'D	ENSOARG00000023165	2	29700000	29800000	<i>U6</i>

Charollais	Tajimas'D	ENSOARG00000023371	2	220200000	220300000	
Charollais	Tajimas'D	ENSOARG00000023421	2	220200000	220300000	
Charollais	Tajimas'D	ENSOARG00000023443	22	4400000	4500000	
Charollais	Tajimas'D	ENSOARG00000023961	3	132800000	132900000	
Charollais	Tajimas'D	ENSOARG00000024062	2	91800000	91900000	5S_rRNA
Charollais	Tajimas'D	ENSOARG00000024098	3	132800000	132900000	U6
Charollais	Tajimas'D	ENSOARG00000024137	7	70000000	70100000	LOC114115972
Charollais	Tajimas'D	ENSOARG00000024555	9	26900000	2.7e+07	
Charollais	Tajimas'D	ENSOARG00000024923	5	68100000	68200000	
Charollais	Tajimas'D	ENSOARG00000025233	4	47300000	47400000	
Charollais	Tajimas'D	ENSOARG00000025326	5	84400000	84500000	
Charollais	Tajimas'D	ENSOARG00000025519	1	38700000	38800000	
Charollais	Tajimas'D	ENSOARG00000025520	1	38700000	38800000	
Charollais	Tajimas'D	ENSOARG00000025636	1	257200000	257300000	
Charollais	Tajimas'D	ENSOARG00000025647	1	269300000	269400000	
Charollais	Tajimas'D	ENSOARG00000025787	2	91800000	91900000	
Charollais	Tajimas'D	ENSOARG00000025998	3	88800000	88900000	
Charollais	Tajimas'D	ENSOARG00000026167	23	16900000	1.7e+07	
Charollais	Tajimas'D	ENSOARG00000026185	23	36800000	36900000	
Charollais	Tajimas'D	ENSOARG00000026837	15	65300000	65400000	
Charollais	Tajimas'D	ENSOARG00000027000	16	71400000	71500000	
Suffolk	Tajimas'D	ENSOARG00000000316	17	35100000	35200000	BLTP1
Suffolk	Tajimas'D	ENSOARG00000000478	6	37300000	37400000	
Suffolk	Tajimas'D	ENSOARG00000000512	13	21700000	21800000	
Suffolk	Tajimas'D	ENSOARG00000000537	6	12400000	12500000	ANK2
Suffolk	Tajimas'D	ENSOARG00000000698	13	21900000	2.2e+07	MLLT10
Suffolk	Tajimas'D	ENSOARG00000000778	4	51600000	51700000	MET
Suffolk	Tajimas'D	ENSOARG00000000948	15	72000000	72100000	HSD17B12
Suffolk	Tajimas'D	ENSOARG00000000998	13	67400000	67500000	DHX35
Suffolk	Tajimas'D	ENSOARG00000001072	17	35400000	35500000	TRPC3
Suffolk	Tajimas'D	ENSOARG00000001332	8	66600000	66700000	VTA1
Suffolk	Tajimas'D	ENSOARG00000001841	13	22700000	22800000	PIP4K2A
Suffolk	Tajimas'D	ENSOARG00000001866	11	34400000	34500000	NT5M
Suffolk	Tajimas'D	ENSOARG00000001874	8	68700000	68800000	UTRN
Suffolk	Tajimas'D	ENSOARG00000001923	11	34400000	34500000	COPS3
Suffolk	Tajimas'D	ENSOARG00000002034	11	34400000	34500000	FLCN
Suffolk	Tajimas'D	ENSOARG00000002043	11	34400000	34500000	PLD6
Suffolk	Tajimas'D	ENSOARG00000002141	8	70300000	70400000	GRM1
Suffolk	Tajimas'D	ENSOARG00000002206	11	34400000	34500000	MPRIP
Suffolk	Tajimas'D	ENSOARG00000002300	9	77400000	77500000	VPS13B
Suffolk	Tajimas'D	ENSOARG00000002693	22	22800000	22900000	CNNM2

Suffolk	Tajimas'D	ENSOARG00000003009	22	22800000	22900000	NT5C2
Suffolk	Tajimas'D	ENSOARG00000003040	17	39800000	39900000	C17H4orf45
Suffolk	Tajimas'D	ENSOARG00000003056	1	103700000	103800000	PMVK
Suffolk	Tajimas'D	ENSOARG00000003126	1	103700000	103800000	PBXIP1
Suffolk	Tajimas'D	ENSOARG00000003199	1	103700000	103800000	SHC1
Suffolk	Tajimas'D	ENSOARG00000003221	3	154900000	1.55e+08	TBC1D30
Suffolk	Tajimas'D	ENSOARG00000003247	3	154900000	1.55e+08	GNS
Suffolk	Tajimas'D	ENSOARG00000003292	1	103700000	103800000	CKS1B
Suffolk	Tajimas'D	ENSOARG00000003310	1	103700000	103800000	FLAD1
Suffolk	Tajimas'D	ENSOARG00000003333	1	103700000	103800000	ZBTB7B
Suffolk	Tajimas'D	ENSOARG00000003339	3	154900000	1.55e+08	RASSF3
Suffolk	Tajimas'D	ENSOARG00000003344	8	75600000	75700000	ESR1
Suffolk	Tajimas'D	ENSOARG00000003354	17	39800000	39900000	FNIP2
Suffolk	Tajimas'D	ENSOARG00000003416	2	238700000	238800000	WASF2
Suffolk	Tajimas'D	ENSOARG00000003527	2	238700000	238800000	CD164L2
Suffolk	Tajimas'D	ENSOARG00000003550	2	238700000	238800000	MAP3K6
Suffolk	Tajimas'D	ENSOARG00000003729	5	56300000	56400000	JAKMIP2
Suffolk	Tajimas'D	ENSOARG00000003817	25	10400000	10500000	RYSR2
Suffolk	Tajimas'D	ENSOARG00000004016	6	37300000	37400000	NCAPG
Suffolk	Tajimas'D	ENSOARG00000004213	13	25600000	25700000	MYO3A
Suffolk	Tajimas'D	ENSOARG00000004249	6	37300000	37400000	
Suffolk	Tajimas'D	ENSOARG00000004333	6	37300000	37400000	LCORL
Suffolk	Tajimas'D	ENSOARG00000004378	12	2800000	2900000	RAB29
Suffolk	Tajimas'D	ENSOARG00000004412	11	34400000	34500000	
Suffolk	Tajimas'D	ENSOARG00000004441	12	2800000	2900000	SLC41A1
Suffolk	Tajimas'D	ENSOARG00000004644	12	2800000	2900000	PM20D1
Suffolk	Tajimas'D	ENSOARG00000004797	1	236600000	236700000	WWTR1
Suffolk	Tajimas'D	ENSOARG00000004841	1	236600000	236700000	TM4SF4
Suffolk	Tajimas'D	ENSOARG00000004978	18	66200000	66300000	TRAF3
Suffolk	Tajimas'D	ENSOARG00000005001	13	25800000	2.6e+07	GJD4
Suffolk	Tajimas'D	ENSOARG00000005011	2	142500000	142600000	TTC21B
Suffolk	Tajimas'D	ENSOARG00000005042	18	39100000	39200000	PRKD1
Suffolk	Tajimas'D	ENSOARG00000005217	24	7500000	7600000	METTL22
Suffolk	Tajimas'D	ENSOARG00000005583	13	73400000	73500000	
Suffolk	Tajimas'D	ENSOARG00000005593	13	73400000	73500000	
Suffolk	Tajimas'D	ENSOARG00000005662	13	73400000	73500000	
Suffolk	Tajimas'D	ENSOARG00000005758	13	73400000	73500000	
Suffolk	Tajimas'D	ENSOARG00000005774	1	243400000	243500000	
Suffolk	Tajimas'D	ENSOARG00000006004	1	27200000	27300000	LOC101117285
Suffolk	Tajimas'D	ENSOARG00000006011	9	49800000	49900000	STAU2
Suffolk	Tajimas'D	ENSOARG00000006190	13	74000000	74100000	

Suffolk	Tajimas'D	ENSOARG00000006196	13	74000000	74100000	
Suffolk	Tajimas'D	ENSOARG00000006203	13	74000000	74100000	
Suffolk	Tajimas'D	ENSOARG00000006282	13	74000000	74100000	
Suffolk	Tajimas'D	ENSOARG00000006310	13	74000000	74100000	WFDC3
Suffolk	Tajimas'D	ENSOARG00000006414	10	2500000	2600000	DIAPH3
Suffolk	Tajimas'D	ENSOARG00000006427	4	96100000	96300000	PLXNA4
Suffolk	Tajimas'D	ENSOARG00000006515	10	84300000	84400000	COL4A2
Suffolk	Tajimas'D	ENSOARG00000006634	1	103700000	103800000	
Suffolk	Tajimas'D	ENSOARG00000006865	15	61700000	61800000	
Suffolk	Tajimas'D	ENSOARG00000007003	17	8300000	8400000	
Suffolk	Tajimas'D	ENSOARG00000007436	6	104100000	104200000	STX18
Suffolk	Tajimas'D	ENSOARG00000007848	11	8000000	8100000	MSI2
Suffolk	Tajimas'D	ENSOARG00000008057	26	14900000	1.5e+07	TLR3
Suffolk	Tajimas'D	ENSOARG00000008084	2	28200000	28300000	WNK2
Suffolk	Tajimas'D	ENSOARG00000008116	2	28200000	28300000	NINJ1
Suffolk	Tajimas'D	ENSOARG00000008125	2	28200000	28300000	
Suffolk	Tajimas'D	ENSOARG00000008126	26	14900000	1.5e+07	FAM149A
Suffolk	Tajimas'D	ENSOARG00000008188	5	59900000	6.00E+07	ANXA6
Suffolk	Tajimas'D	ENSOARG00000008195	26	14900000	1.5e+07	LOC101116121
Suffolk	Tajimas'D	ENSOARG00000008250	26	14900000	1.5e+07	KLKB1
Suffolk	Tajimas'D	ENSOARG00000008399	5	59900000	6.00E+07	CCDC69
Suffolk	Tajimas'D	ENSOARG00000008491	2	29700000	29800000	SLC35D2
Suffolk	Tajimas'D	ENSOARG00000008514	2	29700000	29800000	HSD17B3
Suffolk	Tajimas'D	ENSOARG00000008618	25	30000000	30100000	ADK
Suffolk	Tajimas'D	ENSOARG00000008628	25	30000000	30100000	
Suffolk	Tajimas'D	ENSOARG00000008662	15	77000000	77100000	
Suffolk	Tajimas'D	ENSOARG00000008673	15	77000000	77100000	
Suffolk	Tajimas'D	ENSOARG00000008807	21	25000000	25100000	E2F8
Suffolk	Tajimas'D	ENSOARG00000008913	21	25000000	25100000	CSRP3
Suffolk	Tajimas'D	ENSOARG00000009123	15	77800000	77900000	P2RX3
Suffolk	Tajimas'D	ENSOARG00000009216	15	77800000	77900000	LOC101119933
Suffolk	Tajimas'D	ENSOARG00000009254	15	77800000	77900000	LOC101105274
Suffolk	Tajimas'D	ENSOARG00000009339	15	77800000	77900000	LOC101105022
Suffolk	Tajimas'D	ENSOARG00000009455	20	34500000	34600000	
Suffolk	Tajimas'D	ENSOARG00000009781	23	37300000	37400000	SMCHD1
Suffolk	Tajimas'D	ENSOARG00000009802	2	39100000	39200000	PPP2R2A
Suffolk	Tajimas'D	ENSOARG00000010027	4	29000000	29100000	ITGB8
Suffolk	Tajimas'D	ENSOARG00000010048	22	42900000	4.3e+07	OAT
Suffolk	Tajimas'D	ENSOARG00000010209	22	42900000	4.3e+07	
Suffolk	Tajimas'D	ENSOARG00000010628	12	69300000	69400000	PACC1
Suffolk	Tajimas'D	ENSOARG00000010714	12	17500000	17600000	

Suffolk	Tajimas'D	ENSOARG00000010733	19	35700000	35800000	MAGI1
Suffolk	Tajimas'D	ENSOARG00000010759	12	69300000	69400000	PPP2R5A
Suffolk	Tajimas'D	ENSOARG00000010872	15	78500000	78600000	
Suffolk	Tajimas'D	ENSOARG00000010877	15	78500000	78600000	
Suffolk	Tajimas'D	ENSOARG00000011127	20	38500000	38600000	KIF13A
Suffolk	Tajimas'D	ENSOARG00000011267	9	64500000	64600000	LOC101116738
Suffolk	Tajimas'D	ENSOARG00000011368	12	69800000	69900000	LPGAT1
Suffolk	Tajimas'D	ENSOARG00000011471	15	76800000	76900000	LOC114118327
Suffolk	Tajimas'D	ENSOARG00000011609	15	76800000	76900000	LOC101109389
Suffolk	Tajimas'D	ENSOARG00000011625	15	76800000	76900000	LOC101109644
Suffolk	Tajimas'D	ENSOARG00000011668	15	42300000	42400000	SBF2
Suffolk	Tajimas'D	ENSOARG00000011689	20	9400000	9500000	DEF6
Suffolk	Tajimas'D	ENSOARG00000011785	20	9400000	9500000	PPARD
Suffolk	Tajimas'D	ENSOARG00000011846	3	165000000	165100000	
Suffolk	Tajimas'D	ENSOARG00000011957	2	52600000	52700000	CD72
Suffolk	Tajimas'D	ENSOARG00000011970	2	52600000	52700000	TESK1
Suffolk	Tajimas'D	ENSOARG00000011985	2	52600000	52700000	FAM166B
Suffolk	Tajimas'D	ENSOARG00000011991	1	117300000	117400000	STYXL2
Suffolk	Tajimas'D	ENSOARG00000012003	2	52600000	52700000	RUSC2
Suffolk	Tajimas'D	ENSOARG00000012027	2	52600000	52700000	LOC101109422
Suffolk	Tajimas'D	ENSOARG00000012115	15	42300000	42400000	
Suffolk	Tajimas'D	ENSOARG00000012183	15	77000000	77100000	
Suffolk	Tajimas'D	ENSOARG00000012198	15	77000000	77100000	LOC101102756
Suffolk	Tajimas'D	ENSOARG00000012335	15	77000000	77100000	LOC101114053
Suffolk	Tajimas'D	ENSOARG00000012446	16	41600000	41700000	
Suffolk	Tajimas'D	ENSOARG00000012525	16	41900000	4.2e+07	DROSHA
Suffolk	Tajimas'D	ENSOARG00000012538	4	103300000	103400000	KDM7A
Suffolk	Tajimas'D	ENSOARG00000012806	16	51100000	51200000	CDH12
Suffolk	Tajimas'D	ENSOARG00000012882	13	31800000	31900000	CACNB2
Suffolk	Tajimas'D	ENSOARG00000012895	16	51100000	51200000	
Suffolk	Tajimas'D	ENSOARG00000012905	15	78500000	78600000	LOC101103181
Suffolk	Tajimas'D	ENSOARG00000012911	8	48300000	48400000	RNGTT
Suffolk	Tajimas'D	ENSOARG00000012912	17	17600000	17700000	MAML3
Suffolk	Tajimas'D	ENSOARG00000012972	16	56300000	56400000	MYO10
Suffolk	Tajimas'D	ENSOARG00000012987	17	17600000	17700000	MGST2
Suffolk	Tajimas'D	ENSOARG00000013030	9	32700000	32800000	SNAI2
Suffolk	Tajimas'D	ENSOARG00000013204	6	87200000	87300000	ADAMTS3
Suffolk	Tajimas'D	ENSOARG00000013712	4	32800000	32900000	
Suffolk	Tajimas'D	ENSOARG00000013799	4	32800000	32900000	
Suffolk	Tajimas'D	ENSOARG00000014066	20	24400000	24500000	IL17F
Suffolk	Tajimas'D	ENSOARG00000014143	20	24400000	24500000	MCM3

Suffolk	Tajimas'D	ENSOARG00000015285	3	118800000	118900000	<i>TMTC2</i>
Suffolk	Tajimas'D	ENSOARG00000015357	6	64500000	64600000	<i>GABRG1</i>
Suffolk	Tajimas'D	ENSOARG00000015465	18	58600000	58700000	<i>DICER1</i>
Suffolk	Tajimas'D	ENSOARG00000015555	1	133700000	133800000	<i>NCAM2</i>
Suffolk	Tajimas'D	ENSOARG00000015570	15	44500000	44600000	<i>OVCH2</i>
Suffolk	Tajimas'D	ENSOARG00000015682	15	44500000	44600000	<i>LOC101106282</i>
Suffolk	Tajimas'D	ENSOARG00000015701	2	199100000	199200000	
Suffolk	Tajimas'D	ENSOARG00000015723	2	199100000	199200000	<i>PLCL1</i>
Suffolk	Tajimas'D	ENSOARG00000015802	4	37400000	37500000	<i>PCLO</i>
Suffolk	Tajimas'D	ENSOARG00000015878	2	113700000	113800000	<i>LOC101104720</i>
Suffolk	Tajimas'D	ENSOARG00000015882	15	44500000	44600000	
Suffolk	Tajimas'D	ENSOARG00000015891	2	113700000	113800000	<i>FAM168B</i>
Suffolk	Tajimas'D	ENSOARG00000016040	22	12800000	12900000	<i>HECTD2</i>
Suffolk	Tajimas'D	ENSOARG00000016057	15	60600000	60700000	<i>ELP4</i>
Suffolk	Tajimas'D	ENSOARG00000016176	9	39300000	39400000	<i>CHD7</i>
Suffolk	Tajimas'D	ENSOARG00000016340	3	23500000	23600000	<i>NBAS</i>
Suffolk	Tajimas'D	ENSOARG00000016365	9	93800000	93900000	
Suffolk	Tajimas'D	ENSOARG00000016559	1	143100000	143200000	<i>ROBO2</i>
Suffolk	Tajimas'D	ENSOARG00000016584	2	121500000	121600000	<i>FAM171B</i>
Suffolk	Tajimas'D	ENSOARG00000016607	2	121500000	121600000	<i>ITGAV</i>
Suffolk	Tajimas'D	ENSOARG00000016633	2	122300000	122400000	
Suffolk	Tajimas'D	ENSOARG00000016840	15	61700000	61800000	<i>PRRG4</i>
Suffolk	Tajimas'D	ENSOARG00000016893	15	61700000	61800000	<i>QSER1</i>
Suffolk	Tajimas'D	ENSOARG00000016962	1	152400000	152500000	<i>CADM2</i>
Suffolk	Tajimas'D	ENSOARG00000017142	15	42300000	42400000	
Suffolk	Tajimas'D	ENSOARG00000017153	1	155600000	155700000	<i>LOC101122744</i>
Suffolk	Tajimas'D	ENSOARG00000017244	13	57400000	57500000	<i>ANKRD60</i>
Suffolk	Tajimas'D	ENSOARG00000017326	13	57400000	57500000	<i>C13H20orf85</i>
Suffolk	Tajimas'D	ENSOARG00000017355	3	134800000	134900000	
Suffolk	Tajimas'D	ENSOARG00000017368	3	134800000	134900000	<i>DAZAP2</i>
Suffolk	Tajimas'D	ENSOARG00000017381	3	134800000	134900000	<i>POU6F1</i>
Suffolk	Tajimas'D	ENSOARG00000017390	3	134800000	134900000	<i>TFCP2</i>
Suffolk	Tajimas'D	ENSOARG00000017461	3	174800000	174900000	<i>POLR3B</i>
Suffolk	Tajimas'D	ENSOARG00000017816	3	175400000	175500000	<i>CRY1</i>
Suffolk	Tajimas'D	ENSOARG00000017881	17	34700000	34800000	<i>IL21</i>
Suffolk	Tajimas'D	ENSOARG00000018281	1	164100000	164200000	<i>IMPG2</i>
Suffolk	Tajimas'D	ENSOARG00000018405	5	99200000	99300000	<i>PAM</i>
Suffolk	Tajimas'D	ENSOARG00000018607	5	99500000	99600000	
Suffolk	Tajimas'D	ENSOARG00000018610	5	99500000	99600000	
Suffolk	Tajimas'D	ENSOARG00000018981	1	85400000	85500000	<i>GPSM2</i>
Suffolk	Tajimas'D	ENSOARG00000018992	15	64500000	64600000	

Suffolk	Tajimas'D	ENSOARG00000019005	1	85400000	85500000	CLCC1
Suffolk	Tajimas'D	ENSOARG00000019016	1	85400000	85500000	WDR47
Suffolk	Tajimas'D	ENSOARG00000019017	12	61800000	61900000	RGS8
Suffolk	Tajimas'D	ENSOARG00000019046	12	61800000	61900000	
Suffolk	Tajimas'D	ENSOARG00000019189	1	6900000	7.00E+06	HJURP
Suffolk	Tajimas'D	ENSOARG00000019204	1	6900000	7.00E+06	
Suffolk	Tajimas'D	ENSOARG00000019647	2	219600000	219700000	ZNF142
Suffolk	Tajimas'D	ENSOARG00000019649	2	219600000	219700000	LOC101111607
Suffolk	Tajimas'D	ENSOARG00000019655	1	182000000	182100000	IGSF11
Suffolk	Tajimas'D	ENSOARG00000019660	3	186100000	186200000	CCDC91
Suffolk	Tajimas'D	ENSOARG00000019664	2	219600000	219700000	RNF25
Suffolk	Tajimas'D	ENSOARG00000019667	2	219600000	219700000	STK36
Suffolk	Tajimas'D	ENSOARG00000019690	2	219600000	219700000	TTL4
Suffolk	Tajimas'D	ENSOARG00000019965	7	26700000	26800000	FMN1
Suffolk	Tajimas'D	ENSOARG00000019977	1	184200000	184300000	STXBP5L
Suffolk	Tajimas'D	ENSOARG00000020009	1	184200000	184300000	POLQ
Suffolk	Tajimas'D	ENSOARG00000020101	7	32600000	32700000	EIF2AK4
Suffolk	Tajimas'D	ENSOARG00000020103	3	189900000	1.9e+08	BCAT1
Suffolk	Tajimas'D	ENSOARG00000020171	1	92500000	92600000	SLC22A15
Suffolk	Tajimas'D	ENSOARG00000020194	1	92500000	92600000	MAB21L3
Suffolk	Tajimas'D	ENSOARG00000020326	1	15300000	15400000	CTPS1
Suffolk	Tajimas'D	ENSOARG00000020331	1	15300000	15400000	
Suffolk	Tajimas'D	ENSOARG00000020350	1	15300000	15400000	SCMH1
Suffolk	Tajimas'D	ENSOARG00000020377	1	190000000	190100000	DLG1
Suffolk	Tajimas'D	ENSOARG00000020475	1	195600000	195700000	P3H2
Suffolk	Tajimas'D	ENSOARG00000020478	1	195600000	195700000	TP63
Suffolk	Tajimas'D	ENSOARG00000020732	1	212500000	212600000	SPATA16
Suffolk	Tajimas'D	ENSOARG00000020797	7	44000000	44100000	TPM1
Suffolk	Tajimas'D	ENSOARG00000021101	7	66500000	66600000	EXOC5
Suffolk	Tajimas'D	ENSOARG00000021102	7	66500000	66600000	
Suffolk	Tajimas'D	ENSOARG00000021103	7	66500000	66600000	AP5M1
Suffolk	Tajimas'D	ENSOARG00000021219	1	258700000	258800000	U6
Suffolk	Tajimas'D	ENSOARG00000021581	2	28200000	28300000	LOC114113404
Suffolk	Tajimas'D	ENSOARG00000021636	16	36400000	36500000	LOC114118789
Suffolk	Tajimas'D	ENSOARG00000021717	12	69300000	69400000	U6
Suffolk	Tajimas'D	ENSOARG00000021784	1	85400000	85500000	RNaseP_nuc
Suffolk	Tajimas'D	ENSOARG00000021965	4	23300000	23400000	LOC114114683
Suffolk	Tajimas'D	ENSOARG00000022025	16	56300000	56400000	
Suffolk	Tajimas'D	ENSOARG00000022230	26	27500000	27600000	
Suffolk	Tajimas'D	ENSOARG00000022374	1	85400000	85500000	LOC114111279
Suffolk	Tajimas'D	ENSOARG00000022387	2	238700000	238800000	U6

Suffolk	Tajimas'D	ENSOARG00000022774	3	186100000	186200000	LOC114114162
Suffolk	Tajimas'D	ENSOARG00000022944	12	69800000	69900000	
Suffolk	Tajimas'D	ENSOARG00000023165	2	29700000	29800000	U6
Suffolk	Tajimas'D	ENSOARG00000023246	1	103700000	103800000	LOC114111322
Suffolk	Tajimas'D	ENSOARG00000023583	3	118800000	118900000	U6
Suffolk	Tajimas'D	ENSOARG00000023608	9	64500000	64600000	
Suffolk	Tajimas'D	ENSOARG00000023848	3	189900000	1.9e+08	
Suffolk	Tajimas'D	ENSOARG00000024122	13	22700000	22800000	
Suffolk	Tajimas'D	ENSOARG00000024321	7	66500000	66600000	SNORA72
Suffolk	Tajimas'D	ENSOARG00000024521	3	154900000	1.55e+08	
Suffolk	Tajimas'D	ENSOARG00000024582	2	169100000	169200000	
Suffolk	Tajimas'D	ENSOARG00000024748	13	25800000	2.6e+07	LOC114117672
Suffolk	Tajimas'D	ENSOARG00000024765	26	17700000	17800000	U6
Suffolk	Tajimas'D	ENSOARG00000024821	6	104100000	104200000	LOC121820501
Suffolk	Tajimas'D	ENSOARG00000024850	15	44500000	44600000	LOC114118618
Suffolk	Tajimas'D	ENSOARG00000024926	24	7500000	7600000	5S_rRNA
Suffolk	Tajimas'D	ENSOARG00000025133	7	32600000	32700000	LOC114115908
Suffolk	Tajimas'D	ENSOARG00000025154	11	8000000	8100000	
Suffolk	Tajimas'D	ENSOARG00000025462	12	61800000	61900000	
Suffolk	Tajimas'D	ENSOARG00000025518	1	37900000	3.8e+07	
Suffolk	Tajimas'D	ENSOARG00000025588	1	169200000	169300000	
Suffolk	Tajimas'D	ENSOARG00000025658	17	17600000	17700000	
Suffolk	Tajimas'D	ENSOARG00000025669	17	34700000	34800000	
Suffolk	Tajimas'D	ENSOARG00000026239	13	49200000	49300000	
Suffolk	Tajimas'D	ENSOARG00000026322	10	69700000	69800000	
Suffolk	Tajimas'D	ENSOARG00000026516	9	32700000	32800000	
Suffolk	Tajimas'D	ENSOARG00000026557	9	93800000	93900000	
Suffolk	Tajimas'D	ENSOARG00000026790	26	17700000	17800000	
Suffolk	Tajimas'D	ENSOARG00000026845	15	77800000	77900000	
Suffolk	Tajimas'D	ENSOARG00000026848	15	78500000	78600000	
Texel	Tajimas'D	ENSOARG00000000337	8	61500000	61600000	MAP3K5
Texel	Tajimas'D	ENSOARG00000000856	7	42200000	42300000	LOC101111101
Texel	Tajimas'D	ENSOARG00000001530	8	67600000	67700000	AIG1
Texel	Tajimas'D	ENSOARG00000003400	13	39200000	39300000	RALGAPA2
Texel	Tajimas'D	ENSOARG00000004337	12	77900000	7.8e+07	
Texel	Tajimas'D	ENSOARG00000004431	2	141100000	141200000	LOC101108995
Texel	Tajimas'D	ENSOARG00000004513	9	47900000	4.8e+07	EYA1
Texel	Tajimas'D	ENSOARG00000004710	8	83100000	83200000	SLC22A3
Texel	Tajimas'D	ENSOARG00000005371	9	20800000	20900000	ST3GAL1
Texel	Tajimas'D	ENSOARG00000005583	13	73400000	73500000	
Texel	Tajimas'D	ENSOARG00000005593	13	73400000	73500000	

Texel	Tajimas'D	ENSOARG00000005662	13	73400000	73500000	
Texel	Tajimas'D	ENSOARG00000005758	13	73400000	73500000	
Texel	Tajimas'D	ENSOARG00000005847	3	78500000	78600000	<i>PRKCE</i>
Texel	Tajimas'D	ENSOARG00000005969	20	3500000	3600000	
Texel	Tajimas'D	ENSOARG00000006174	14	48300000	48400000	<i>SUPT5H</i>
Texel	Tajimas'D	ENSOARG00000006227	14	48300000	48400000	<i>TIMM50</i>
Texel	Tajimas'D	ENSOARG00000006280	14	48300000	48400000	<i>DLL3</i>
Texel	Tajimas'D	ENSOARG00000006288	14	48300000	48400000	<i>SELEN OV</i>
Texel	Tajimas'D	ENSOARG00000006427	4	96000000	96100000	<i>PLXNA4</i>
Texel	Tajimas'D	ENSOARG00000006557	18	41800000	41900000	<i>AKAP6</i>
Texel	Tajimas'D	ENSOARG00000006681	18	43300000	43400000	<i>EGLN3</i>
Texel	Tajimas'D	ENSOARG00000007086	1	106800000	106900000	
Texel	Tajimas'D	ENSOARG00000007440	2	21400000	21500000	<i>GRIN3A</i>
Texel	Tajimas'D	ENSOARG00000007464	2	21400000	21500000	<i>PPP3R2</i>
Texel	Tajimas'D	ENSOARG00000007489	2	21400000	21500000	<i>RNF20</i>
Texel	Tajimas'D	ENSOARG00000007511	2	21400000	21500000	<i>ALDOB</i>
Texel	Tajimas'D	ENSOARG00000007545	3	81700000	81800000	<i>EML4</i>
Texel	Tajimas'D	ENSOARG00000007863	1	250900000	2.51e+08	<i>STAG1</i>
Texel	Tajimas'D	ENSOARG00000007925	1	250900000	2.51e+08	<i>PCCB</i>
Texel	Tajimas'D	ENSOARG00000008014	10	17000000	17100000	<i>LRCH1</i>
Texel	Tajimas'D	ENSOARG00000008104	10	17000000	17100000	<i>ESD</i>
Texel	Tajimas'D	ENSOARG00000008502	26	16400000	16500000	<i>TRIML1</i>
Texel	Tajimas'D	ENSOARG00000008648	15	13900000	1.4e+07	<i>MTMR2</i>
Texel	Tajimas'D	ENSOARG00000008734	17	60900000	6.1e+07	<i>TPCN1</i>
Texel	Tajimas'D	ENSOARG00000008750	20	24600000	24700000	<i>PAQR8</i>
Texel	Tajimas'D	ENSOARG00000008840	15	13900000	1.4e+07	<i>CEP57</i>
Texel	Tajimas'D	ENSOARG00000008875	17	60900000	6.1e+07	<i>SLC8B1</i>
Texel	Tajimas'D	ENSOARG00000008906	15	13900000	1.4e+07	<i>FAM76B</i>
Texel	Tajimas'D	ENSOARG00000009456	22	29700000	29800000	<i>MXI1</i>
Texel	Tajimas'D	ENSOARG00000010058	1	41200000	41300000	
Texel	Tajimas'D	ENSOARG00000010168	4	29400000	29500000	<i>ABCB5</i>
Texel	Tajimas'D	ENSOARG00000010187	16	36600000	36700000	<i>WDR70</i>
Texel	Tajimas'D	ENSOARG00000010206	18	11700000	11800000	<i>MCTP2</i>
Texel	Tajimas'D	ENSOARG00000010344	3	90400000	90500000	<i>LTBP1</i>
Texel	Tajimas'D	ENSOARG00000010379	25	37700000	37800000	
Texel	Tajimas'D	ENSOARG00000010394	1	40700000	40800000	<i>LEPR</i>
Texel	Tajimas'D	ENSOARG00000010508	9	86300000	86400000	<i>DECR1</i>
Texel	Tajimas'D	ENSOARG00000010512	5	65300000	65400000	<i>SGCD</i>
Texel	Tajimas'D	ENSOARG00000010520	5	65300000	65400000	
Texel	Tajimas'D	ENSOARG00000010666	18	15700000	15800000	<i>AKAP13</i>
Texel	Tajimas'D	ENSOARG00000010712	18	15700000	15800000	<i>KLHL25</i>

Texel	Tajimas'D	ENSOARG00000010803	9	86300000	86400000	<i>NBN</i>
Texel	Tajimas'D	ENSOARG00000010897	12	35500000	35600000	<i>SELL</i>
Texel	Tajimas'D	ENSOARG00000011075	12	35500000	35600000	<i>SELE</i>
Texel	Tajimas'D	ENSOARG00000011105	9	31800000	31900000	
Texel	Tajimas'D	ENSOARG00000011218	3	163400000	163500000	<i>SARNP</i>
Texel	Tajimas'D	ENSOARG00000011231	3	163400000	163500000	
Texel	Tajimas'D	ENSOARG00000011244	3	163400000	163500000	<i>RDH5</i>
Texel	Tajimas'D	ENSOARG00000011313	3	163400000	163500000	<i>CD63</i>
Texel	Tajimas'D	ENSOARG00000011326	3	163400000	163500000	<i>BLOC1S1</i>
Texel	Tajimas'D	ENSOARG00000011427	3	163400000	163500000	<i>ITGA7</i>
Texel	Tajimas'D	ENSOARG00000011505	3	163400000	163500000	<i>METTL7B</i>
Texel	Tajimas'D	ENSOARG00000011553	2	248500000	248600000	<i>MFAP2</i>
Texel	Tajimas'D	ENSOARG00000011766	4	30700000	30800000	<i>CDCA7L</i>
Texel	Tajimas'D	ENSOARG00000011822	19	39100000	39200000	
Texel	Tajimas'D	ENSOARG00000011923	2	248500000	248600000	<i>NECAP2</i>
Texel	Tajimas'D	ENSOARG00000011979	2	248500000	248600000	
Texel	Tajimas'D	ENSOARG00000012024	1	46300000	46400000	
Texel	Tajimas'D	ENSOARG00000012030	15	53100000	53200000	<i>LOC101107387</i>
Texel	Tajimas'D	ENSOARG00000012042	2	248500000	248600000	
Texel	Tajimas'D	ENSOARG00000012050	3	211300000	211400000	<i>CCDC77</i>
Texel	Tajimas'D	ENSOARG00000012073	15	53100000	53200000	
Texel	Tajimas'D	ENSOARG00000012718	6	22300000	22400000	<i>NFKB1</i>
Texel	Tajimas'D	ENSOARG00000012853	1	53000000	53100000	<i>PIGK</i>
Texel	Tajimas'D	ENSOARG00000013211	2	68400000	68500000	<i>KANK1</i>
Texel	Tajimas'D	ENSOARG00000013475	3	213000000	213100000	
Texel	Tajimas'D	ENSOARG00000013489	3	213000000	213100000	<i>ATP6V1E1</i>
Texel	Tajimas'D	ENSOARG00000013495	4	2400000	2500000	
Texel	Tajimas'D	ENSOARG00000013505	3	213000000	213100000	
Texel	Tajimas'D	ENSOARG00000013879	24	18800000	18900000	<i>DNAH3</i>
Texel	Tajimas'D	ENSOARG00000014041	21	33600000	33700000	<i>OPCML</i>
Texel	Tajimas'D	ENSOARG00000014361	16	63500000	63600000	<i>SEMA5A</i>
Texel	Tajimas'D	ENSOARG00000014365	24	18800000	18900000	
Texel	Tajimas'D	ENSOARG00000014372	20	24600000	24700000	<i>EFHC1</i>
Texel	Tajimas'D	ENSOARG00000014466	9	35800000	35900000	<i>TMEM68</i>
Texel	Tajimas'D	ENSOARG00000014506	20	24600000	24700000	
Texel	Tajimas'D	ENSOARG00000014535	20	24600000	24700000	<i>TRAM2</i>
Texel	Tajimas'D	ENSOARG00000015228	2	104300000	104400000	<i>GATA4</i>
Texel	Tajimas'D	ENSOARG00000015237	2	104300000	104400000	<i>NEIL2</i>
Texel	Tajimas'D	ENSOARG00000015250	2	104300000	104400000	<i>FDFT1</i>
Texel	Tajimas'D	ENSOARG00000015357	6	64500000	64600000	<i>GABRG1</i>
Texel	Tajimas'D	ENSOARG00000015530	19	46100000	46200000	<i>CACNA2D3</i>

Texel	Tajimas'D	ENSOARG00000015740	1	67600000	67800000	ZNF644
Texel	Tajimas'D	ENSOARG00000015812	1	67600000	67800000	HFM1
Texel	Tajimas'D	ENSOARG00000016097	2	116900000	1.17e+08	IWS1
Texel	Tajimas'D	ENSOARG00000016105	2	116900000	1.17e+08	
Texel	Tajimas'D	ENSOARG00000016171	3	77400000	77500000	SOCS5
Texel	Tajimas'D	ENSOARG00000016229	2	117600000	117700000	NEMP2
Texel	Tajimas'D	ENSOARG00000016246	2	117600000	117700000	MFSD6
Texel	Tajimas'D	ENSOARG00000016802	2	126300000	126400000	PDE1A
Texel	Tajimas'D	ENSOARG00000016813	2	126500000	126600000	PPP1R1C
Texel	Tajimas'D	ENSOARG00000016867	2	127200000	127500000	ITGA4
Texel	Tajimas'D	ENSOARG00000016885	2	127700000	127800000	UBE2E3
Texel	Tajimas'D	ENSOARG00000016924	2	129400000	129700000	ZNF385B
Texel	Tajimas'D	ENSOARG00000016943	2	129800000	129900000	LOC101122080
Texel	Tajimas'D	ENSOARG00000016969	2	130100000	130200000	CCDC141
Texel	Tajimas'D	ENSOARG00000017075	9	42900000	4.3e+07	MTFR1
Texel	Tajimas'D	ENSOARG00000017134	9	42900000	4.3e+07	PDE7A
Texel	Tajimas'D	ENSOARG00000017195	2	130100000	130200000	TTN
Texel	Tajimas'D	ENSOARG00000017237	12	47700000	47800000	PRDM16
Texel	Tajimas'D	ENSOARG00000017355	3	134800000	134900000	
Texel	Tajimas'D	ENSOARG00000017368	3	134800000	134900000	DAZAP2
Texel	Tajimas'D	ENSOARG00000017381	3	134800000	134900000	POU6F1
Texel	Tajimas'D	ENSOARG00000017390	3	134800000	134900000	TFCP2
Texel	Tajimas'D	ENSOARG00000017403	2	131500000	131700000	AGPS
Texel	Tajimas'D	ENSOARG00000017505	4	80800000	80900000	SUGCT
Texel	Tajimas'D	ENSOARG00000018072	12	77900000	7.8e+07	
Texel	Tajimas'D	ENSOARG00000018076	12	77900000	7.8e+07	LOC101109820
Texel	Tajimas'D	ENSOARG00000018113	7	12600000	12700000	MEGF11
Texel	Tajimas'D	ENSOARG00000018166	12	77900000	7.8e+07	ADIPOR1
Texel	Tajimas'D	ENSOARG00000018301	12	77900000	7.8e+07	KLHL12
Texel	Tajimas'D	ENSOARG00000019676	3	37500000	37600000	GALNT14
Texel	Tajimas'D	ENSOARG00000020376	1	95500000	95600000	TBX15
Texel	Tajimas'D	ENSOARG00000020459	1	194600000	194700000	GMNC
Texel	Tajimas'D	ENSOARG00000020475	1	195600000	195700000	P3H2
Texel	Tajimas'D	ENSOARG00000020478	1	195600000	195700000	TP63
Texel	Tajimas'D	ENSOARG00000020509	1	198600000	198700000	ADIPOQ
Texel	Tajimas'D	ENSOARG00000020512	1	198600000	198700000	RFC4
Texel	Tajimas'D	ENSOARG00000020517	1	198600000	198700000	EIF4A2
Texel	Tajimas'D	ENSOARG00000020714	7	42200000	42300000	
Texel	Tajimas'D	ENSOARG00000021128	7	69600000	69700000	SIX6
Texel	Tajimas'D	ENSOARG00000021770	4	52600000	52700000	U6
Texel	Tajimas'D	ENSOARG00000021774	2	130100000	130200000	U6

Texel	Tajimas'D	ENSOARG00000022315	1	198600000	198700000	SNORA63
Texel	Tajimas'D	ENSOARG00000022371	2	141100000	141200000	
Texel	Tajimas'D	ENSOARG00000022629	1	198600000	198700000	LOC114111297
Texel	Tajimas'D	ENSOARG00000022667	1	198600000	198700000	LOC114111381
Texel	Tajimas'D	ENSOARG00000022762	7	12600000	12700000	U6
Texel	Tajimas'D	ENSOARG00000023293	12	22000000	22100000	
Texel	Tajimas'D	ENSOARG00000023382	10	6400000	6500000	
Texel	Tajimas'D	ENSOARG00000023422	22	3500000	3600000	
Texel	Tajimas'D	ENSOARG00000023472	1	198600000	198700000	LOC114111371
Texel	Tajimas'D	ENSOARG00000023620	1	198600000	198700000	LOC114114666
Texel	Tajimas'D	ENSOARG00000023725	2	71400000	71500000	
Texel	Tajimas'D	ENSOARG00000024622	22	29700000	29800000	7SK
Texel	Tajimas'D	ENSOARG00000024661	18	11700000	11800000	U4
Texel	Tajimas'D	ENSOARG00000025200	4	600000	7.00E+05	
Texel	Tajimas'D	ENSOARG00000025209	4	2400000	2500000	
Texel	Tajimas'D	ENSOARG00000025436	12	22000000	22100000	
Texel	Tajimas'D	ENSOARG00000025472	12	77900000	7.8e+07	
Texel	Tajimas'D	ENSOARG00000025473	12	77900000	7.8e+07	
Texel	Tajimas'D	ENSOARG00000025534	1	67600000	67800000	
Texel	Tajimas'D	ENSOARG00000025798	2	114100000	114200000	
Texel	Tajimas'D	ENSOARG00000025997	3	86500000	86600000	
Texel	Tajimas'D	ENSOARG00000026232	13	43400000	43500000	
Texel	Tajimas'D	ENSOARG00000026508	9	20800000	20900000	
Texel	Tajimas'D	ENSOARG00000026555	9	91900000	9.2e+07	
Texel	Tajimas'D	ENSOARG00000027002	16	71700000	71800000	
Vendeen	Tajimas'D	ENSOARG00000000348	6	21900000	2.2e+07	
Vendeen	Tajimas'D	ENSOARG00000000613	6	62800000	62900000	
Vendeen	Tajimas'D	ENSOARG00000000725	2	135500000	135600000	MAP3K20
Vendeen	Tajimas'D	ENSOARG00000000810	8	63300000	63400000	NHSL1
Vendeen	Tajimas'D	ENSOARG00000000935	10	69900000	7.00E+07	LOC101106534
Vendeen	Tajimas'D	ENSOARG00000001045	13	22100000	22200000	DNAJC1
Vendeen	Tajimas'D	ENSOARG00000001060	6	70500000	70600000	KDR
Vendeen	Tajimas'D	ENSOARG00000001123	15	72200000	72300000	ALKBH3
Vendeen	Tajimas'D	ENSOARG00000001126	15	49200000	49300000	LOC101123408
Vendeen	Tajimas'D	ENSOARG00000001301	15	49200000	49300000	RRM1
Vendeen	Tajimas'D	ENSOARG00000001355	13	68900000	6.9e+07	
Vendeen	Tajimas'D	ENSOARG00000001416	4	114200000	114300000	
Vendeen	Tajimas'D	ENSOARG00000001765	18	31500000	31600000	HMG20A
Vendeen	Tajimas'D	ENSOARG00000001874	8	68900000	6.9e+07	UTRN
Vendeen	Tajimas'D	ENSOARG00000002377	10	72600000	72700000	UGGT2
Vendeen	Tajimas'D	ENSOARG00000002617	8	68400000	68500000	SF3B5

Vendeen	Tajimas'D	ENSOARG00000002844	15	1500000	1600000	GRIA4
Vendeen	Tajimas'D	ENSOARG00000003133	3	69100000	69200000	EML6
Vendeen	Tajimas'D	ENSOARG00000003189	22	38800000	38900000	INPP5F
Vendeen	Tajimas'D	ENSOARG00000003230	1	230000000	230100000	C1H3orf33
Vendeen	Tajimas'D	ENSOARG00000003274	9	78600000	78700000	NIPAL2
Vendeen	Tajimas'D	ENSOARG00000003414	1	21400000	21500000	LOC101106121
Vendeen	Tajimas'D	ENSOARG00000003430	1	21400000	21500000	PDZK1IP1
Vendeen	Tajimas'D	ENSOARG00000003457	9	78600000	78700000	POP1
Vendeen	Tajimas'D	ENSOARG00000003573	12	64200000	64300000	RNF2
Vendeen	Tajimas'D	ENSOARG00000003786	12	64200000	64300000	TRMT1L
Vendeen	Tajimas'D	ENSOARG00000003798	22	14900000	1.5e+07	PLCE1
Vendeen	Tajimas'D	ENSOARG00000003863	4	46900000	4.7e+07	
Vendeen	Tajimas'D	ENSOARG00000004043	2	239200000	239300000	GPN2
Vendeen	Tajimas'D	ENSOARG00000004063	2	239200000	239300000	ZDHHC18
Vendeen	Tajimas'D	ENSOARG00000004156	12	64200000	64300000	SWT1
Vendeen	Tajimas'D	ENSOARG00000004157	2	239200000	239300000	PIGV
Vendeen	Tajimas'D	ENSOARG00000004275	2	239200000	239300000	ARID1A
Vendeen	Tajimas'D	ENSOARG00000004500	4	47300000	47400000	NAMPT
Vendeen	Tajimas'D	ENSOARG00000004815	18	33700000	33800000	LOC101113279
Vendeen	Tajimas'D	ENSOARG00000005501	2	143200000	143300000	SCN3A
Vendeen	Tajimas'D	ENSOARG00000005660	11	5800000	5900000	PCTP
Vendeen	Tajimas'D	ENSOARG00000005705	2	2800000	3.00E+06	
Vendeen	Tajimas'D	ENSOARG00000005733	2	2800000	3.00E+06	CDK5RAP2
Vendeen	Tajimas'D	ENSOARG00000005779	2	240100000	240200000	
Vendeen	Tajimas'D	ENSOARG00000005794	2	240100000	240200000	AUNIP
Vendeen	Tajimas'D	ENSOARG00000005797	4	114200000	114300000	CCT8L2
Vendeen	Tajimas'D	ENSOARG00000005807	2	240100000	240200000	MTFR1L
Vendeen	Tajimas'D	ENSOARG00000005818	11	5800000	5900000	LOC101121870
Vendeen	Tajimas'D	ENSOARG00000005844	4	15900000	1.6e+07	GLCCI1
Vendeen	Tajimas'D	ENSOARG00000005889	2	240100000	240200000	SELENON
Vendeen	Tajimas'D	ENSOARG00000005906	2	240100000	240200000	MAN1C1
Vendeen	Tajimas'D	ENSOARG00000006046	4	16100000	16200000	ICA1
Vendeen	Tajimas'D	ENSOARG00000006073	10	26200000	26300000	MAB21L1
Vendeen	Tajimas'D	ENSOARG00000006458	16	14700000	14800000	CWC27
Vendeen	Tajimas'D	ENSOARG00000006486	16	14700000	14800000	SREK1IP1
Vendeen	Tajimas'D	ENSOARG00000006542	16	14700000	14800000	SHISAL2B
Vendeen	Tajimas'D	ENSOARG00000006557	18	42100000	42200000	AKAP6
Vendeen	Tajimas'D	ENSOARG00000006661	25	27600000	27700000	CDH23
Vendeen	Tajimas'D	ENSOARG00000006696	15	49200000	49300000	LOC101123149
Vendeen	Tajimas'D	ENSOARG00000006783	1	245900000	2.46e+08	SPSB4
Vendeen	Tajimas'D	ENSOARG00000006865	15	61700000	61800000	

Vendeen	Tajimas'D	ENSOARG00000006899	8	5700000	5800000	<i>PHIP</i>
Vendeen	Tajimas'D	ENSOARG00000007297	18	67500000	67600000	
Vendeen	Tajimas'D	ENSOARG00000007347	18	67500000	67600000	
Vendeen	Tajimas'D	ENSOARG00000007457	12	65600000	65700000	<i>PDC</i>
Vendeen	Tajimas'D	ENSOARG00000007798	1	250300000	250400000	<i>NCK1</i>
Vendeen	Tajimas'D	ENSOARG00000007832	2	26000000	26100000	<i>AUH</i>
Vendeen	Tajimas'D	ENSOARG00000007899	2	27100000	27200000	
Vendeen	Tajimas'D	ENSOARG00000007913	2	27100000	27200000	
Vendeen	Tajimas'D	ENSOARG00000007981	2	27400000	27500000	<i>PTPDC1</i>
Vendeen	Tajimas'D	ENSOARG00000008011	2	154000000	154100000	<i>GALNT13</i>
Vendeen	Tajimas'D	ENSOARG00000008191	18	46300000	46400000	<i>MIPOL1</i>
Vendeen	Tajimas'D	ENSOARG00000008278	4	45900000	4.6e+07	
Vendeen	Tajimas'D	ENSOARG00000008395	10	86000000	86100000	
Vendeen	Tajimas'D	ENSOARG00000008433	10	86000000	86100000	<i>TMCO3</i>
Vendeen	Tajimas'D	ENSOARG00000008441	10	86000000	86100000	<i>TFDP1</i>
Vendeen	Tajimas'D	ENSOARG00000008450	10	86000000	86100000	
Vendeen	Tajimas'D	ENSOARG00000008488	1	33900000	3.4e+07	<i>FGGY</i>
Vendeen	Tajimas'D	ENSOARG00000008489	26	16300000	16400000	<i>TRIML2</i>
Vendeen	Tajimas'D	ENSOARG00000008491	2	29700000	29800000	<i>SLC35D2</i>
Vendeen	Tajimas'D	ENSOARG00000008502	26	16300000	16400000	<i>TRIML1</i>
Vendeen	Tajimas'D	ENSOARG00000008514	2	29700000	29800000	<i>HSD17B3</i>
Vendeen	Tajimas'D	ENSOARG00000008644	2	87000000	87100000	<i>RRAGA</i>
Vendeen	Tajimas'D	ENSOARG00000008677	25	30600000	30700000	<i>KAT6B</i>
Vendeen	Tajimas'D	ENSOARG00000008724	25	30600000	30700000	<i>DUSP29</i>
Vendeen	Tajimas'D	ENSOARG00000008930	2	156900000	1.57e+08	<i>RIF1</i>
Vendeen	Tajimas'D	ENSOARG00000009019	2	156900000	1.57e+08	<i>TNFAIP6</i>
Vendeen	Tajimas'D	ENSOARG00000009024	2	35900000	3.6e+07	
Vendeen	Tajimas'D	ENSOARG00000009288	23	35600000	35700000	
Vendeen	Tajimas'D	ENSOARG00000009301	23	35600000	35700000	<i>COLEC12</i>
Vendeen	Tajimas'D	ENSOARG00000009322	6	55500000	55600000	<i>ARAP2</i>
Vendeen	Tajimas'D	ENSOARG00000009448	1	257200000	257300000	
Vendeen	Tajimas'D	ENSOARG00000009802	2	39100000	39200000	<i>PPP2R2A</i>
Vendeen	Tajimas'D	ENSOARG00000009938	2	166000000	166100000	<i>KYNU</i>
Vendeen	Tajimas'D	ENSOARG00000010120	12	13400000	13500000	<i>BRINP3</i>
Vendeen	Tajimas'D	ENSOARG00000010184	1	40300000	40400000	<i>AK4</i>
Vendeen	Tajimas'D	ENSOARG00000010187	16	36600000	36700000	<i>WDR70</i>
Vendeen	Tajimas'D	ENSOARG00000010375	15	16000000	16100000	<i>GUCY1A2</i>
Vendeen	Tajimas'D	ENSOARG00000010414	25	38700000	38800000	<i>GHITM</i>
Vendeen	Tajimas'D	ENSOARG00000010420	25	38700000	38800000	
Vendeen	Tajimas'D	ENSOARG00000010505	25	38700000	38800000	<i>CDHR1</i>
Vendeen	Tajimas'D	ENSOARG00000010627	10	26200000	26300000	

Vendeen	Tajimas'D	ENSOARG00000010709	8	28400000	28500000	ARMC2
Vendeen	Tajimas'D	ENSOARG00000010714	12	17500000	17600000	
Vendeen	Tajimas'D	ENSOARG00000010748	15	72200000	72300000	
Vendeen	Tajimas'D	ENSOARG00000011201	9	3300000	3400000	B3GAT2
Vendeen	Tajimas'D	ENSOARG00000011252	9	3300000	3400000	SMAP1
Vendeen	Tajimas'D	ENSOARG00000011290	9	3600000	3700000	
Vendeen	Tajimas'D	ENSOARG00000011336	9	3600000	3700000	FAM135A
Vendeen	Tajimas'D	ENSOARG00000011353	3	93000000	93100000	NAGK
Vendeen	Tajimas'D	ENSOARG00000011367	3	93000000	93100000	PAIP2B
Vendeen	Tajimas'D	ENSOARG00000011501	8	35300000	35400000	GRIK2
Vendeen	Tajimas'D	ENSOARG00000011616	10	29300000	29400000	EEF1A1
Vendeen	Tajimas'D	ENSOARG00000011668	15	42300000	42400000	SBF2
Vendeen	Tajimas'D	ENSOARG00000011671	19	38400000	38500000	CADPS
Vendeen	Tajimas'D	ENSOARG00000011768	5	66300000	66400000	CYFIP2
Vendeen	Tajimas'D	ENSOARG00000011794	6	21900000	2.2e+07	SLC9B2
Vendeen	Tajimas'D	ENSOARG00000011922	8	37500000	37600000	FAXC
Vendeen	Tajimas'D	ENSOARG00000011926	10	30700000	30800000	KATNAL1
Vendeen	Tajimas'D	ENSOARG00000011972	6	21900000	2.2e+07	LOC101106685
Vendeen	Tajimas'D	ENSOARG00000012115	15	42300000	42400000	
Vendeen	Tajimas'D	ENSOARG00000012225	5	66300000	66400000	
Vendeen	Tajimas'D	ENSOARG00000012352	22	32600000	32700000	TCF7L2
Vendeen	Tajimas'D	ENSOARG00000012407	1	50400000	50500000	ERICH3
Vendeen	Tajimas'D	ENSOARG00000012515	2	59900000	6.00E+07	
Vendeen	Tajimas'D	ENSOARG00000012600	3	9200000	9300000	
Vendeen	Tajimas'D	ENSOARG00000012911	8	48300000	48400000	RNGTT
Vendeen	Tajimas'D	ENSOARG00000012932	3	97000000	97100000	
Vendeen	Tajimas'D	ENSOARG00000012948	3	97000000	97100000	FHL2
Vendeen	Tajimas'D	ENSOARG00000013110	9	67600000	67700000	PKHD1L1
Vendeen	Tajimas'D	ENSOARG00000013294	3	168800000	168900000	
Vendeen	Tajimas'D	ENSOARG00000013356	3	168800000	168900000	
Vendeen	Tajimas'D	ENSOARG00000013382	18	21900000	2.2e+07	PDE8A
Vendeen	Tajimas'D	ENSOARG00000013571	18	21900000	2.2e+07	RPS17
Vendeen	Tajimas'D	ENSOARG00000013595	18	21900000	2.2e+07	CPEB1
Vendeen	Tajimas'D	ENSOARG00000013601	12	24200000	24300000	MIA3
Vendeen	Tajimas'D	ENSOARG00000013626	3	103100000	103200000	TMEM131
Vendeen	Tajimas'D	ENSOARG00000013694	6	24200000	24300000	EMCN
Vendeen	Tajimas'D	ENSOARG00000013880	12	24200000	24300000	LOC114112240
Vendeen	Tajimas'D	ENSOARG00000014181	2	87000000	87100000	HAUS6
Vendeen	Tajimas'D	ENSOARG00000014556	20	11300000	11400000	RNF8
Vendeen	Tajimas'D	ENSOARG00000014686	3	107900000	1.08e+08	TPH2
Vendeen	Tajimas'D	ENSOARG00000014698	20	11300000	11400000	

Vendeen	Tajimas'D	ENSOARG00000014701	3	107900000	1.08e+08	
Vendeen	Tajimas'D	ENSOARG00000015171	3	116800000	116900000	LIN7A
Vendeen	Tajimas'D	ENSOARG00000015186	3	117000000	117200000	ACSS3
Vendeen	Tajimas'D	ENSOARG00000015220	3	117000000	117200000	PPFIA2
Vendeen	Tajimas'D	ENSOARG00000015310	2	105100000	105200000	HPGD
Vendeen	Tajimas'D	ENSOARG00000015388	20	25200000	25300000	ELOVL5
Vendeen	Tajimas'D	ENSOARG00000015403	3	122000000	122100000	NTS
Vendeen	Tajimas'D	ENSOARG00000015625	1	250300000	250400000	
Vendeen	Tajimas'D	ENSOARG00000015676	3	19800000	19900000	PDIA6
Vendeen	Tajimas'D	ENSOARG00000015871	3	129900000	1.3e+08	CRADD
Vendeen	Tajimas'D	ENSOARG00000015979	9	73100000	73200000	
Vendeen	Tajimas'D	ENSOARG00000016047	1	68100000	68200000	TGFBR3
Vendeen	Tajimas'D	ENSOARG00000016229	2	117600000	117700000	NEMP2
Vendeen	Tajimas'D	ENSOARG00000016246	2	117600000	117700000	MFSD6
Vendeen	Tajimas'D	ENSOARG00000016292	4	38100000	38200000	CACNA2D1
Vendeen	Tajimas'D	ENSOARG00000016559	1	143100000	143200000	ROBO2
Vendeen	Tajimas'D	ENSOARG00000016596	3	25700000	25800000	SMC6
Vendeen	Tajimas'D	ENSOARG00000016702	3	25700000	25800000	GEN1
Vendeen	Tajimas'D	ENSOARG00000016760	3	128300000	128400000	BTG1
Vendeen	Tajimas'D	ENSOARG00000016779	3	129900000	1.3e+08	
Vendeen	Tajimas'D	ENSOARG00000016840	15	61700000	61800000	PRRG4
Vendeen	Tajimas'D	ENSOARG00000016893	15	61700000	61800000	QSER1
Vendeen	Tajimas'D	ENSOARG00000016905	2	128900000	1.29e+08	CWC22
Vendeen	Tajimas'D	ENSOARG00000016941	3	137000000	137100000	
Vendeen	Tajimas'D	ENSOARG00000016961	17	32800000	32900000	ANKRD50
Vendeen	Tajimas'D	ENSOARG00000017000	6	66900000	6.7e+07	LOC101102485
Vendeen	Tajimas'D	ENSOARG00000017107	10	40000000	40100000	
Vendeen	Tajimas'D	ENSOARG00000017142	15	42300000	42400000	
Vendeen	Tajimas'D	ENSOARG00000017335	2	130600000	130700000	OSBPL6
Vendeen	Tajimas'D	ENSOARG00000017507	3	135300000	135400000	TMPRSS12
Vendeen	Tajimas'D	ENSOARG00000017519	3	135300000	135400000	
Vendeen	Tajimas'D	ENSOARG00000017647	3	137000000	137100000	
Vendeen	Tajimas'D	ENSOARG00000017949	12	59300000	59400000	CEP350
Vendeen	Tajimas'D	ENSOARG00000018025	4	83100000	83200000	
Vendeen	Tajimas'D	ENSOARG00000018194	1	163800000	163900000	ABI3BP
Vendeen	Tajimas'D	ENSOARG00000018302	2	239200000	239300000	SFN
Vendeen	Tajimas'D	ENSOARG00000018975	3	137000000	137100000	KMT2D
Vendeen	Tajimas'D	ENSOARG00000019034	3	137000000	137100000	PRKAG1
Vendeen	Tajimas'D	ENSOARG00000019059	3	137000000	137100000	WNT1
Vendeen	Tajimas'D	ENSOARG00000019064	3	137000000	137100000	
Vendeen	Tajimas'D	ENSOARG00000019065	3	137000000	137100000	FKBP11

Vendeen	Tajimas'D	ENSOARG00000019349	1	86300000	86400000	CSF1
Vendeen	Tajimas'D	ENSOARG00000019358	3	34400000	34500000	FNDC4
Vendeen	Tajimas'D	ENSOARG00000019373	3	34400000	34500000	
Vendeen	Tajimas'D	ENSOARG00000019376	3	34400000	34500000	
Vendeen	Tajimas'D	ENSOARG00000019385	3	34400000	34500000	ZNF512
Vendeen	Tajimas'D	ENSOARG00000019390	3	19800000	19900000	
Vendeen	Tajimas'D	ENSOARG00000019454	3	34700000	34800000	RBKS
Vendeen	Tajimas'D	ENSOARG00000019458	3	34700000	34800000	BABAM2
Vendeen	Tajimas'D	ENSOARG00000020049	1	13900000	1.4e+07	
Vendeen	Tajimas'D	ENSOARG00000020054	1	13900000	1.4e+07	
Vendeen	Tajimas'D	ENSOARG00000020060	1	13900000	1.4e+07	PABPC4
Vendeen	Tajimas'D	ENSOARG00000020167	1	185400000	185500000	SLC49A4
Vendeen	Tajimas'D	ENSOARG00000020350	1	15500000	15600000	SCMH1
Vendeen	Tajimas'D	ENSOARG00000020442	1	96500000	96600000	NOTCH2
Vendeen	Tajimas'D	ENSOARG00000020473	2	228000000	228100000	IRS1
Vendeen	Tajimas'D	ENSOARG00000020732	1	212500000	212600000	SPATA16
Vendeen	Tajimas'D	ENSOARG00000020863	7	49500000	49600000	MYZAP
Vendeen	Tajimas'D	ENSOARG00000020971	7	55700000	55800000	DMXL2
Vendeen	Tajimas'D	ENSOARG00000020974	7	55900000	5.6e+07	
Vendeen	Tajimas'D	ENSOARG00000020976	7	55900000	5.6e+07	GLDN
Vendeen	Tajimas'D	ENSOARG00000021097	7	65600000	65700000	
Vendeen	Tajimas'D	ENSOARG00000021242	2	105100000	105200000	
Vendeen	Tajimas'D	ENSOARG00000021248	6	70500000	70600000	LOC114115485
Vendeen	Tajimas'D	ENSOARG00000021397	12	13400000	13500000	
Vendeen	Tajimas'D	ENSOARG00000021553	16	18800000	18900000	
Vendeen	Tajimas'D	ENSOARG00000021572	1	13900000	1.4e+07	LOC114111320
Vendeen	Tajimas'D	ENSOARG00000021583	12	55100000	55200000	LOC114117369
Vendeen	Tajimas'D	ENSOARG00000021740	18	21900000	2.2e+07	LOC114109248
Vendeen	Tajimas'D	ENSOARG00000021860	8	68400000	68500000	5S
Vendeen	Tajimas'D	ENSOARG00000022171	2	57800000	57900000	
Vendeen	Tajimas'D	ENSOARG00000022278	2	27100000	27200000	LOC114113471
Vendeen	Tajimas'D	ENSOARG00000022812	22	14900000	1.5e+07	LOC114110346
Vendeen	Tajimas'D	ENSOARG00000022929	16	18800000	18900000	
Vendeen	Tajimas'D	ENSOARG00000022968	2	130600000	130700000	
Vendeen	Tajimas'D	ENSOARG00000023065	6	41700000	41800000	LOC114115434
Vendeen	Tajimas'D	ENSOARG00000023165	2	29700000	29800000	U6
Vendeen	Tajimas'D	ENSOARG00000023212	8	37500000	37600000	
Vendeen	Tajimas'D	ENSOARG00000023269	19	22400000	22500000	
Vendeen	Tajimas'D	ENSOARG00000023422	22	3500000	3600000	
Vendeen	Tajimas'D	ENSOARG00000023580	12	53400000	53500000	U6
Vendeen	Tajimas'D	ENSOARG00000023653	2	87000000	87100000	LOC114113391

Vendeen	Tajimas'D	ENSOARG00000023750	7	49500000	49600000	U6
Vendeen	Tajimas'D	ENSOARG00000023978	2	224200000	224300000	LOC114113425
Vendeen	Tajimas'D	ENSOARG00000024082	6	70500000	70600000	U6
Vendeen	Tajimas'D	ENSOARG00000024179	3	137000000	137100000	
Vendeen	Tajimas'D	ENSOARG00000024797	4	45900000	4.6e+07	
Vendeen	Tajimas'D	ENSOARG00000024870	16	17700000	17800000	
Vendeen	Tajimas'D	ENSOARG00000024888	12	63500000	63600000	5S_rRNA
Vendeen	Tajimas'D	ENSOARG00000025032	1	15500000	15600000	U6
Vendeen	Tajimas'D	ENSOARG00000025108	16	17700000	17800000	U6
Vendeen	Tajimas'D	ENSOARG00000025172	16	14700000	14800000	
Vendeen	Tajimas'D	ENSOARG00000025230	4	38700000	38800000	
Vendeen	Tajimas'D	ENSOARG00000025233	4	47300000	47400000	
Vendeen	Tajimas'D	ENSOARG00000025269	4	114200000	114300000	
Vendeen	Tajimas'D	ENSOARG00000025510	1	12800000	12900000	
Vendeen	Tajimas'D	ENSOARG00000025626	1	245900000	2.46e+08	
Vendeen	Tajimas'D	ENSOARG00000025636	1	257200000	257300000	
Vendeen	Tajimas'D	ENSOARG00000025647	1	269300000	269400000	
Vendeen	Tajimas'D	ENSOARG00000025751	2	27100000	27200000	
Vendeen	Tajimas'D	ENSOARG00000025771	2	57800000	57900000	
Vendeen	Tajimas'D	ENSOARG00000025817	2	158600000	158700000	
Vendeen	Tajimas'D	ENSOARG00000025819	2	158600000	158700000	
Vendeen	Tajimas'D	ENSOARG00000026006	3	98700000	98800000	
Vendeen	Tajimas'D	ENSOARG00000026019	3	122000000	122100000	
Vendeen	Tajimas'D	ENSOARG00000026306	10	42300000	42400000	
Vendeen	Tajimas'D	ENSOARG00000026318	10	60400000	60500000	
Vendeen	Tajimas'D	ENSOARG00000026334	10	83800000	83900000	
Vendeen	Tajimas'D	ENSOARG00000026528	9	41400000	41500000	
Vendeen	Tajimas'D	ENSOARG00000026596	6	82400000	82500000	
Vendeen	Tajimas'D	ENSOARG00000026651	19	25700000	25800000	
Vendeen	Tajimas'D	ENSOARG00000026713	7	61400000	61500000	
Vendeen	Tajimas'D	ENSOARG00000026741	22	14900000	1.5e+07	

CHR: Chromosome.

Supplementary Table S4. Annotated QTLs within the selection signatures regions detected using iHS and Tajima's D test

Breed	Method	CHR	Start	End	QTL_type	trait_ID	Flank_Markers
Belclare	iHS	2	78900000	7.9e+07	Exterior	Brown	
Belclare	iHS	1	58900000	5.9e+07	Exterior	Horn_type	rs419928136
Belclare	iHS	5	41100000	41200000	Exterior	Stature	
Belclare	iHS	7	9100000	9200000	Exterior	Teat_placement	
Belclare	iHS	9	31900000	3.2e+07	Exterior	Chest_width	rs428789339
Belclare	iHS	9	31900000	3.2e+07	Exterior	Rump_width	rs428789339
Belclare	iHS	15	10100000	10200000	Exterior	udder_shape	
Belclare	iHS	20	6300000	6400000	Exterior	udder_depth	
Belclare	iHS	23	12600000	12700000	Exterior	Rear_leg_set	
Belclare	iHS	23	12600000	12700000	Exterior	Foot_angle	
Belclare	iHS	26	32900000	3.3e+07	Exterior	Stature	
Belclare	iHS	26	32900000	3.3e+07	Exterior	udder_attachment	
Belclare	iHS	2	71900000	7.2e+07	Health	Trichostrongylus_adult_and_larva_count	
Belclare	iHS	2	1.16e+08	116200000	Health	Nematodirus_FEC	
Belclare	iHS	2	217700000	217800000	Health	Worm_count	
Belclare	iHS	2	217700000	217800000	Health	Change_in_hematocrit	
Belclare	iHS	2	217700000	217800000	Health	Haemonchus_contortus_FEC	
Belclare	iHS	1	2.1e+08	210100000	Health	Salmonella_abortusovis_susceptibility	
Belclare	iHS	1	2.1e+08	210100000	Health	Fecal_egg_count	
Belclare	iHS	1	223700000	223800000	Health	Trichostrongylus_colubriformis_FEC	
Belclare	iHS	3	19200000	19300000	Health	Haemonchus_contortus_FEC	
Belclare	iHS	3	122100000	122200000	Health	Trichostrongylus_colubriformis_FEC	
Belclare	iHS	3	132100000	132200000	Health	Change_in_eosinophil_number	
Belclare	iHS	3	140800000	140900000	Health	Immunoglobulin_A_level	
Belclare	iHS	4	10700000	10800000	Health	Haemonchus_contortus_FEC	
Belclare	iHS	5	22200000	22300000	Health	Inherited_Ovine_Arthrogryposis	
Belclare	iHS	6	43200000	43300000	Health	facial_eczema_susceptibility	
Belclare	iHS	6	43200000	43300000	Health	Fecal_egg_count	
Belclare	iHS	8	64200000	64300000	Health	Trichostrongylus_adult_and_larva_count	

Belclare	iHS	8	64200000	64300000	Health	Fecal_egg_count
Belclare	iHS	9	7900000	8.00E+06	Health	Fecal_egg_count
Belclare	iHS	9	31900000	3.2e+07	Health	Salmonella_abortusovis_susceptibility
Belclare	iHS	10	49100000	49200000	Health	Fecal_egg_count
Belclare	iHS	15	36700000	36800000	Health	facial_eczema_susceptibility
Belclare	iHS	17	9900000	1.00E+07	Health	Fecal_egg_count
Belclare	iHS	20	9400000	9500000	Health	Strongyle_FEC
Belclare	iHS	22	12800000	12900000	Health	Somatic_cell_score
Belclare	iHS	23	12600000	12700000	Health	Immunoglobulin_E_level
Belclare	iHS	23	12600000	12700000	Health	Haemonchus_contortus_FEC
Belclare	iHS	2	1.2e+07	12100000	Meat_and_Carcass	Meat_arachidonic_acid_content
Belclare	iHS	2	1.2e+07	12100000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Belclare	iHS	2	1.2e+07	12100000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Belclare	iHS	2	1.2e+07	12100000	Meat_and_Carcass	Meat_linolenic_acid_content
Belclare	iHS	2	71900000	7.2e+07	Meat_and_Carcass	Hot_carcass_weight
Belclare	iHS	2	78900000	7.9e+07	Meat_and_Carcass	Ultimate_pH
Belclare	iHS	2	78900000	7.9e+07	Meat_and_Carcass	Meat_color_a*
Belclare	iHS	2	1.16e+08	116200000	Meat_and_Carcass	Meat_color_L*
Belclare	iHS	2	1.16e+08	116200000	Meat_and_Carcass	Meat_color_b*
Belclare	iHS	2	1.16e+08	116200000	Meat_and_Carcass	Meat_color_a*
Belclare	iHS	2	1.16e+08	116200000	Meat_and_Carcass	Shear_force
Belclare	iHS	2	1.16e+08	116200000	Meat_and_Carcass	Meat_color_L*
Belclare	iHS	2	1.16e+08	116200000	Meat_and_Carcass	Foreleg_length
Belclare	iHS	2	1.91e+08	191100000	Meat_and_Carcass	Hot_carcass_weight
Belclare	iHS	1	16800000	16900000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	iHS	1	16800000	16900000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	iHS	1	16800000	16900000	Meat_and_Carcass	Carcass_fat_percentage
Belclare	iHS	1	58900000	5.9e+07	Meat_and_Carcass	Bone_weight_in_carcass
Belclare	iHS	1	58900000	5.9e+07	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Belclare	iHS	1	58900000	5.9e+07	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Belclare	iHS	1	58900000	5.9e+07	Meat_and_Carcass	Carcass_bone_percentage

Belclare	iHS	1	58900000	5.9e+07	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Belclare	iHS	1	132100000	132200000	Meat_and_Carcass	Backfat_at_third_lumbar
Belclare	iHS	1	132100000	132200000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Belclare	iHS	1	139700000	139800000	Meat_and_Carcass	Bone_weight_in_carcass
Belclare	iHS	1	139700000	139800000	Meat_and_Carcass	Carcass_bone_percentage
Belclare	iHS	1	2.1e+08	210100000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	iHS	1	2.1e+08	210100000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Belclare	iHS	3	77400000	77500000	Meat_and_Carcass	internal_fat_amount
Belclare	iHS	3	77400000	77500000	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Belclare	iHS	3	122100000	122200000	Meat_and_Carcass	internal_fat_amount
Belclare	iHS	5	22200000	22300000	Meat_and_Carcass	Meat_palmitoleic_acid_content
Belclare	iHS	6	43200000	43300000	Meat_and_Carcass	fat_weight_in_carcass
Belclare	iHS	6	43200000	43300000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	iHS	6	43200000	43300000	Meat_and_Carcass	Carcass_fat_percentage
Belclare	iHS	6	43200000	43300000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	iHS	6	43200000	43300000	Meat_and_Carcass	Hot_carcass_weight
Belclare	iHS	6	43200000	43300000	Meat_and_Carcass	Hot_carcass_weight
Belclare	iHS	7	9100000	9200000	Meat_and_Carcass	Longissimus_muscle_area
Belclare	iHS	8	64200000	64300000	Meat_and_Carcass	internal_fat_amount
Belclare	iHS	9	7900000	8.00E+06	Meat_and_Carcass	Longissimus_muscle_area
Belclare	iHS	9	7900000	8.00E+06	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	iHS	9	31900000	3.2e+07	Meat_and_Carcass	Hot_carcass_weight
Belclare	iHS	9	31900000	3.2e+07	Meat_and_Carcass	Longissimus_muscle_area
Belclare	iHS	9	45100000	45200000	Meat_and_Carcass	Longissimus_muscle_area
Belclare	iHS	9	45100000	45200000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	iHS	10	49100000	49200000	Meat_and_Carcass	Carcass_fat_percentage
Belclare	iHS	10	49100000	49200000	Meat_and_Carcass	Carcass_bone_percentage
Belclare	iHS	10	49100000	49200000	Meat_and_Carcass	fat_weight_in_carcass
Belclare	iHS	10	49100000	49200000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	iHS	13	8400000	8500000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	iHS	16	1.3e+07	13100000	Meat_and_Carcass	Lean_meat_yield_percentage

Belclare	iHS	16	1.3e+07	13100000	Meat_and_Carcass	Dressing_percentage	
Belclare	iHS	16	1.3e+07	13100000	Meat_and_Carcass	Subcutaneous_fat_thickness	
Belclare	iHS	16	1.3e+07	13100000	Meat_and_Carcass	Subcutaneous_fat_area	
Belclare	iHS	16	3.3e+07	33100000	Meat_and_Carcass	Subcutaneous_fat_area	
Belclare	iHS	18	17500000	17600000	Meat_and_Carcass	Meat_gadoleic_acid_content	
Belclare	iHS	18	17500000	17600000	Meat_and_Carcass	Meat_docosaehaenoic_acid_content	
Belclare	iHS	19	36200000	36300000	Meat_and_Carcass	Dressing_percentage	
Belclare	iHS	23	12600000	12700000	Meat_and_Carcass	Lean_meat_yield_percentage	
Belclare	iHS	23	12600000	12700000	Meat_and_Carcass	muscle_weight_in_carcass	
Belclare	iHS	23	12600000	12700000	Meat_and_Carcass	Carcass_fat_percentage	
Belclare	iHS	23	12600000	12700000	Meat_and_Carcass	fat_weight_in_carcass	
Belclare	iHS	23	12600000	12700000	Meat_and_Carcass	Hot_carcass_weight	
Belclare	iHS	23	12600000	12700000	Meat_and_Carcass	Lean_meat_yield_percentage	
Belclare	iHS	23	12600000	12700000	Meat_and_Carcass	fat_weight_in_carcass	
Belclare	iHS	2	1.2e+07	12100000	Milk	Milk_fat_percentage	
Belclare	iHS	2	129100000	129200000	Milk	milk_lactose_yield	
Belclare	iHS	2	1.36e+08	136100000	Milk	Milk_Yield	
Belclare	iHS	3	77400000	77500000	Milk	Milk_fat_percentage	
Belclare	iHS	3	77400000	77500000	Milk	Milk_Yield	
Belclare	iHS	3	77400000	77500000	Milk	milk_lactose_yield	
Belclare	iHS	3	132100000	132200000	Milk	Milk_protein_percentage	rs159833100
Belclare	iHS	3	139500000	139600000	Milk	Milk_protein_percentage	
Belclare	iHS	3	140800000	140900000	Milk	Milk_protein_percentage	
Belclare	iHS	6	43200000	43300000	Milk	Milk_Yield	
Belclare	iHS	6	43200000	43300000	Milk	milk_lactose_yield	
Belclare	iHS	9	7900000	8.00E+06	Milk	Useful_yield_content	
Belclare	iHS	18	17500000	17600000	Milk	Milk_Yield	
Belclare	iHS	20	6300000	6400000	Milk	Milk_Yield	
Belclare	iHS	25	12500000	12600000	Milk	Milk_fat_percentage	
Belclare	iHS	25	12500000	12600000	Milk	Useful_yield_content	
Belclare	iHS	2	71900000	7.2e+07	Production	Body_weight	

Belclare	iHS	2	78900000	7.9e+07	Production	Body_weight	
Belclare	iHS	2	1.91e+08	191100000	Production	Body_weight	
Belclare	iHS	2	217700000	217800000	Production	bone_density	
Belclare	iHS	2	217700000	217800000	Production	Body_weight	
Belclare	iHS	1	132100000	132200000	Production	Body_weight	
Belclare	iHS	1	132100000	132200000	Production	bone_density	
Belclare	iHS	3	132100000	132200000	Production	Body_weight	
Belclare	iHS	3	139500000	139600000	Production	Body_weight	
Belclare	iHS	4	10700000	10800000	Production	Body_weight	
Belclare	iHS	4	28100000	28200000	Production	Body_weight	
Belclare	iHS	5	22200000	22300000	Production	Body_weight	
Belclare	iHS	5	88100000	88200000	Production	Body_weight	
Belclare	iHS	5	88100000	88200000	Production	Age_at_maximum_daily_gain	
Belclare	iHS	6	43200000	43300000	Production	Body_weight	
Belclare	iHS	6	43200000	43300000	Production	Body_weight	
Belclare	iHS	16	1.3e+07	13100000	Production	Body_weight	
Belclare	iHS	16	1.3e+07	13100000	Production	Body_weight	
Belclare	iHS	23	12600000	12700000	Production	Average_daily_gain	
Belclare	iHS	23	12600000	12700000	Production	Body_weight	
Belclare	iHS	1	2.1e+08	210100000	Reproduction	Reproductive_seasonality	
Belclare	iHS	10	49100000	49200000	Reproduction	Testes_weight	
Belclare	iHS	18	17500000	17600000	Reproduction	Testes_weight	
Belclare	iHS	20	6300000	6400000	Reproduction	Testes_weight	
Belclare	iHS	20	6300000	6400000	Reproduction	Testes_weight	
Belclare	iHS	25	12500000	12600000	Reproduction	Testes_weight	
Belclare	iHS	1	151800000	151900000	Wool	Fleece_yield	
Belclare	iHS	1	2.1e+08	210100000	Wool	Fleece_yield	
Belclare	iHS	1	2.42e+08	242100000	Wool	Fiber_curvature	
Belclare	iHS	1	262500000	262600000	Wool	Mean_fiber_diameter	rs412029732
Belclare	iHS	3	19200000	19300000	Wool	Staple_length	
Belclare	iHS	4	10700000	10800000	Wool	mary_fiber_diameter_coefficient_of_variance	

Belclare	iHS	6	43200000	43300000	Wool	Mean_fiber_diameter	
Belclare	iHS	7	9100000	9200000	Wool	mary_fiber_diameter_coefficient_of_variance	
Belclare	iHS	7	9100000	9200000	Wool	Staple_length	
Belclare	iHS	15	36700000	36800000	Wool	Staple_length	
Belclare	iHS	18	17500000	17600000	Wool	Staple_length	
Belclare	iHS	25	12500000	12600000	Wool	Mean_fiber_diameter	
Belclare	iHS	25	12500000	12600000	Wool	mary_fiber_diameter_coefficient_of_variance	
Belclare	iHS	25	12500000	12600000	Wool	Greasy_fleece_weight	
Belclare	iHS	25	12500000	12600000	Wool	Staple_length	
Charollais	iHS	2	132500000	132600000	Exterior	Horn_number	rs399038829
Charollais	iHS	2	132500000	132600000	Exterior	Horn_number	rs416536940
Charollais	iHS	2	132500000	132600000	Exterior	Horn_number	rs398511030
Charollais	iHS	2	132500000	132600000	Exterior	Horn_number	rs429616422
Charollais	iHS	2	132500000	132600000	Exterior	Horn_number	rs398720862
Charollais	iHS	2	212700000	212800000	Exterior	Teat_number	rs400325896
Charollais	iHS	5	36900000	3.7e+07	Exterior	Stature	
Charollais	iHS	1	112500000	112600000	Health	facial_eczema_susceptibility	
Charollais	iHS	1	193900000	1.94e+08	Health	Salmonella_abortusovis_susceptibility	
Charollais	iHS	1	213200000	213300000	Health	Fecal_egg_count	
Charollais	iHS	1	213200000	213300000	Health	Trichostrongylus_colubriformis_FEC	
Charollais	iHS	1	235600000	235800000	Health	Somatic_cell_score	rs161717499
Charollais	iHS	2	67200000	67300000	Health	Trichostrongylus_adult_and_larva_count	
Charollais	iHS	2	99400000	99500000	Health	Somatic_cell_score	
Charollais	iHS	2	207600000	207700000	Health	Milk_bacterial_count	rs401261998
Charollais	iHS	2	212700000	212800000	Health	Worm_count	
Charollais	iHS	2	212700000	212800000	Health	Change_in_hematocrit	
Charollais	iHS	2	212700000	212800000	Health	Haemonchus_contortus_FEC	
Charollais	iHS	3	109400000	109500000	Health	facial_eczema_susceptibility	
Charollais	iHS	3	126100000	126200000	Health	Trichostrongylus_colubriformis_FEC	
Charollais	iHS	3	127100000	127200000	Health	Change_in_eosinophil_number	
Charollais	iHS	5	36900000	3.7e+07	Health	Inherited_Ovine_Arthrogryposis	

Charollais	iHS	6	91400000	91500000	Health	Trichostrongylus_colubriformis_FEC	
Charollais	iHS	8	83200000	83300000	Health	Trichostrongylus_adult_and_larva_count	
Charollais	iHS	8	83200000	83300000	Health	Fecal_egg_count	
Charollais	iHS	10	5.6e+07	56100000	Health	Fecal_egg_count	
Charollais	iHS	10	5.6e+07	56100000	Health	Strongyle_FEC	rs403481418
Charollais	iHS	13	30900000	3.1e+07	Health	Salmonella_abortusovis_susceptibility	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	Lean_meat_yield_percentage	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	Carcass_fat_percentage	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	Bone_weight_in_carcass	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	Carcass_bone_percentage	
Charollais	iHS	1	56300000	56400000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content	
Charollais	iHS	1	83800000	83900000	Meat_and_Carcass	Backfat_at_third_lumbar	
Charollais	iHS	1	83800000	83900000	Meat_and_Carcass	Muscle_depth_at_third_lumbar	
Charollais	iHS	1	1.34e+08	134100000	Meat_and_Carcass	Bone_weight_in_carcass	
Charollais	iHS	1	1.34e+08	134100000	Meat_and_Carcass	Carcass_bone_percentage	
Charollais	iHS	1	167400000	167500000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	iHS	1	167400000	167500000	Meat_and_Carcass	Carcass_fat_percentage	
Charollais	iHS	1	193900000	1.94e+08	Meat_and_Carcass	Lean_meat_yield_percentage	
Charollais	iHS	1	193900000	1.94e+08	Meat_and_Carcass	Muscle_depth_at_third_lumbar	
Charollais	iHS	2	67200000	67300000	Meat_and_Carcass	Meat_arachidonic_acid_content	
Charollais	iHS	2	67200000	67300000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content	
Charollais	iHS	2	67200000	67300000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Charollais	iHS	2	67200000	67300000	Meat_and_Carcass	Meat_linolenic_acid_content	
Charollais	iHS	2	67200000	67300000	Meat_and_Carcass	Hot_carcass_weight	
Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Ultimate_pH	
Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Meat_color_a*	
Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Meat_color_L*	
Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Meat_color_b*	

Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Meat_color_a*
Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Shear_force
Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Meat_color_L*
Charollais	iHS	2	99400000	99500000	Meat_and_Carcass	Subcutaneous_fat_thickness
Charollais	iHS	2	136800000	136900000	Meat_and_Carcass	Leg_fat_weight
Charollais	iHS	3	1.04e+08	104200000	Meat_and_Carcass	internal_fat_amount
Charollais	iHS	3	1.04e+08	104200000	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Charollais	iHS	3	1.04e+08	104200000	Meat_and_Carcass	internal_fat_amount
Charollais	iHS	5	36900000	3.7e+07	Meat_and_Carcass	Meat_palmitoleic_acid_content
Charollais	iHS	6	84400000	84500000	Meat_and_Carcass	fat_weight_in_carcass
Charollais	iHS	6	84400000	84500000	Meat_and_Carcass	Carcass_fat_percentage
Charollais	iHS	6	84400000	84500000	Meat_and_Carcass	Lean_meat_yield_percentage
Charollais	iHS	10	5.6e+07	56100000	Meat_and_Carcass	Carcass_fat_percentage
Charollais	iHS	10	5.6e+07	56100000	Meat_and_Carcass	Carcass_bone_percentage
Charollais	iHS	10	5.6e+07	56100000	Meat_and_Carcass	fat_weight_in_carcass
Charollais	iHS	10	5.6e+07	56100000	Meat_and_Carcass	Lean_meat_yield_percentage
Charollais	iHS	13	30900000	3.1e+07	Meat_and_Carcass	muscle_weight_in_carcass
Charollais	iHS	15	73500000	73600000	Meat_and_Carcass	Hind_leg_length
Charollais	iHS	16	48300000	48400000	Meat_and_Carcass	Lean_meat_yield_percentage
Charollais	iHS	16	48300000	48400000	Meat_and_Carcass	Dressing_percentage
Charollais	iHS	16	48300000	48400000	Meat_and_Carcass	Subcutaneous_fat_thickness
Charollais	iHS	16	48300000	48400000	Meat_and_Carcass	Subcutaneous_fat_area
Charollais	iHS	18	36200000	36300000	Meat_and_Carcass	Meat_gadoleic_acid_content
Charollais	iHS	18	36200000	36300000	Meat_and_Carcass	Meat_docosaheanoic_acid_content
Charollais	iHS	18	36200000	36300000	Meat_and_Carcass	Carcass_fat_percentage
Charollais	iHS	1	83800000	83900000	Milk	Milk_Yield
Charollais	iHS	1	102100000	102200000	Milk	Milk_fat_percentage
Charollais	iHS	1	102100000	102200000	Milk	Milk_Yield
Charollais	iHS	1	102100000	102200000	Milk	Milk_protein_percentage
Charollais	iHS	1	112500000	112600000	Milk	Milk_Yield
Charollais	iHS	1	112500000	112600000	Milk	Milk_protein_percentage

Charollais	iHS	1	112500000	112600000	Milk	Milk_fat_percentage
Charollais	iHS	1	193900000	1.94e+08	Milk	Milk_protein_yield
Charollais	iHS	2	67200000	67300000	Milk	Milk_fat_percentage
Charollais	iHS	2	125600000	125700000	Milk	milk_lactose_yield
Charollais	iHS	2	136800000	136900000	Milk	Milk_Yield
Charollais	iHS	2	174900000	1.75e+08	Milk	Milk_Yield
Charollais	iHS	3	136800000	136900000	Milk	Milk_protein_percentage
Charollais	iHS	6	84400000	84500000	Milk	Useful_yield_content
Charollais	iHS	8	83200000	83300000	Milk	milk_lactose_yield
Charollais	iHS	9	91100000	91200000	Milk	Milk_fat_yield
Charollais	iHS	23	54600000	54700000	Milk	Milk_fat_yield
Charollais	iHS	23	54600000	54700000	Milk	Milk_Yield
Charollais	iHS	1	102100000	102200000	Production	Body_weight
Charollais	iHS	1	112500000	112600000	Production	bone_density
Charollais	iHS	1	133200000	133300000	Production	bone_density
Charollais	iHS	2	67200000	67300000	Production	Body_weight
Charollais	iHS	2	212700000	212800000	Production	bone_density
Charollais	iHS	2	212700000	212800000	Production	Body_weight
Charollais	iHS	3	136800000	136900000	Production	Body_weight
Charollais	iHS	3	136800000	136900000	Production	Body_weight
Charollais	iHS	5	36900000	3.7e+07	Production	Body_weight
Charollais	iHS	5	106700000	106800000	Production	Body_weight
Charollais	iHS	6	84400000	84500000	Production	Body_weight
Charollais	iHS	8	83200000	83300000	Production	Body_weight
Charollais	iHS	8	84700000	84800000	Production	Body_weight
Charollais	iHS	16	48300000	48400000	Production	Body_weight
Charollais	iHS	1	167400000	167500000	Reproduction	Reproductive_seasonality
Charollais	iHS	1	193900000	1.94e+08	Reproduction	Reproductive_seasonality
Charollais	iHS	10	5.6e+07	56100000	Reproduction	Testes_weight
Charollais	iHS	18	36200000	36300000	Reproduction	Testes_weight
Charollais	iHS	1	167400000	167500000	Wool	Fleece_yield

Charollais	iHS	1	213200000	213300000	Wool	Fleece_yield	
Charollais	iHS	1	235600000	235800000	Wool	Fiber_curvature	
Charollais	iHS	1	261300000	261400000	Wool	Mean_fiber_diameter	rs401124967
Charollais	iHS	3	1.04e+08	104200000	Wool	Staple_length	
Charollais	iHS	4	85800000	85900000	Wool	mary_fiber_diameter_coefficient_of_variance	
Charollais	iHS	6	84400000	84500000	Wool	Mean_fiber_diameter	
Charollais	iHS	7	97700000	97800000	Wool	mary_fiber_diameter_coefficient_of_variance	
Charollais	iHS	7	97700000	97800000	Wool	Staple_length	
Charollais	iHS	15	73500000	73600000	Wool	Staple_length	
Charollais	iHS	18	36200000	36300000	Wool	Staple_length	
Suffolk	iHS	2	115700000	115800000	Exterior	Horn_type	rs405044765
Suffolk	iHS	2	115700000	115800000	Exterior	Horn_type	rs402400571
Suffolk	iHS	2	1.32e+08	132100000	Exterior	Horn_number	rs402358740
Suffolk	iHS	2	1.32e+08	132100000	Exterior	Horn_number	rs409681360
Suffolk	iHS	2	1.32e+08	132100000	Exterior	Horn_number	rs424229224
Suffolk	iHS	2	1.32e+08	132100000	Exterior	Horn_number	rs420183358
Suffolk	iHS	2	132200000	132300000	Exterior	Horn_number	rs418381175
Suffolk	iHS	2	132200000	132300000	Exterior	Horn_number	rs408254270
Suffolk	iHS	3	170300000	170400000	Exterior	Teat_number	rs161822052
Suffolk	iHS	10	12100000	12200000	Exterior	Horns	
Suffolk	iHS	1	121900000	1.22e+08	Health	Fecal_egg_count	
Suffolk	iHS	1	171700000	171900000	Health	Salmonella_abortusovis_susceptibility	
Suffolk	iHS	1	178900000	1.79e+08	Health	Mean_corpuscular_hemoglobin_content	rs399122125
Suffolk	iHS	1	178900000	1.79e+08	Health	Platelet_count	rs399122125
Suffolk	iHS	1	178900000	1.79e+08	Health	Mean_corpuscular_volume	rs399122125
Suffolk	iHS	1	244800000	244900000	Health	Trichostrongylus_colubriformis_FEC	
Suffolk	iHS	2	115700000	115800000	Health	Trichostrongylus_adult_and_larva_count	
Suffolk	iHS	2	115700000	115800000	Health	Nematodirus_FEC	
Suffolk	iHS	2	210500000	210600000	Health	Worm_count	
Suffolk	iHS	2	210500000	210600000	Health	Change_in_hematocrit	
Suffolk	iHS	2	210500000	210600000	Health	Haemonchus_contortus_FEC	

Suffolk	iHS	3	23500000	23600000	Health	Haemonchus_contortus_FEC
Suffolk	iHS	3	23500000	23600000	Health	Trichostrongylus_colubriformis_FEC
Suffolk	iHS	3	118600000	118700000	Health	Trichostrongylus_colubriformis_FEC
Suffolk	iHS	3	129900000	1.3e+08	Health	Change_in_eosinophil_number
Suffolk	iHS	3	179900000	1.8e+08	Health	Hematocrit
Suffolk	iHS	3	179900000	1.8e+08	Health	Nematodirus_FEC
Suffolk	iHS	3	182700000	182800000	Health	Nematodirus_FEC
Suffolk	iHS	3	196900000	1.97e+08	Health	Fecal_oocyst_count
Suffolk	iHS	3	196900000	1.97e+08	Health	Fecal_egg_count
Suffolk	iHS	5	26100000	26200000	Health	Inherited_Ovine_Arthrogryposis
Suffolk	iHS	5	26100000	26200000	Health	Blood_albumin_level
Suffolk	iHS	6	38900000	3.9e+07	Health	facial_eczema_susceptibility
Suffolk	iHS	6	38900000	3.9e+07	Health	Fecal_egg_count
Suffolk	iHS	6	9.7e+07	97100000	Health	Trichostrongylus_colubriformis_FEC
Suffolk	iHS	6	98800000	98900000	Health	Heritable_cataract
Suffolk	iHS	7	49800000	49900000	Health	Haemonchus_contortus_FEC
Suffolk	iHS	8	37100000	37200000	Health	Trichostrongylus_adult_and_larva_count
Suffolk	iHS	11	18800000	18900000	Health	Trichostrongylus_adult_and_larva_count
Suffolk	iHS	17	1.6e+07	16100000	Health	Fecal_egg_count
Suffolk	iHS	22	13600000	13700000	Health	Somatic_cell_score
Suffolk	iHS	26	18600000	18700000	Health	Change_in_hematocrit
Suffolk	iHS	26	18600000	18700000	Health	Worm_count
Suffolk	iHS	26	18600000	18700000	Health	Eggs_per_worm
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Lean_meat_yield_percentage
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Carcass_fat_percentage
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Bone_weight_in_carcass
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Backfat_at_third_lumbar

Suffolk	iHS	1	86700000	86800000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Suffolk	iHS	1	171700000	171900000	Meat_and_Carcass	Bone_weight_in_carcass
Suffolk	iHS	1	171700000	171900000	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	iHS	1	171700000	171900000	Meat_and_Carcass	Carcass_fat_percentage
Suffolk	iHS	1	178900000	1.79e+08	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	iHS	1	178900000	1.79e+08	Meat_and_Carcass	Lean_meat_yield_percentage
Suffolk	iHS	1	193500000	193600000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Suffolk	iHS	2	57800000	57900000	Meat_and_Carcass	Meat_arachidonic_acid_content
Suffolk	iHS	2	57800000	57900000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Suffolk	iHS	2	57800000	57900000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Suffolk	iHS	2	57800000	57900000	Meat_and_Carcass	Meat_linolenic_acid_content
Suffolk	iHS	2	57800000	57900000	Meat_and_Carcass	Hot_carcass_weight
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Ultimate_pH
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Meat_color_a*
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Meat_color_L*
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Meat_color_b*
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Meat_color_a*
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Shear_force
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Meat_color_L*
Suffolk	iHS	2	115700000	115800000	Meat_and_Carcass	Foreleg_length
Suffolk	iHS	2	192200000	192300000	Meat_and_Carcass	Hot_carcass_weight
Suffolk	iHS	3	118600000	118700000	Meat_and_Carcass	internal_fat_amount
Suffolk	iHS	3	118600000	118700000	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Suffolk	iHS	3	118600000	118700000	Meat_and_Carcass	internal_fat_amount
Suffolk	iHS	5	26100000	26200000	Meat_and_Carcass	Meat_palmitoleic_acid_content
Suffolk	iHS	6	38900000	3.9e+07	Meat_and_Carcass	fat_weight_in_carcass
Suffolk	iHS	6	38900000	3.9e+07	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	iHS	6	38900000	3.9e+07	Meat_and_Carcass	Carcass_fat_percentage
Suffolk	iHS	6	38900000	3.9e+07	Meat_and_Carcass	Lean_meat_yield_percentage
Suffolk	iHS	6	38900000	3.9e+07	Meat_and_Carcass	Hot_carcass_weight
Suffolk	iHS	6	38900000	3.9e+07	Meat_and_Carcass	Hot_carcass_weight

Suffolk	iHS	6	9.7e+07	97100000	Meat_and_Carcass	Longissimus_muscle_area	rs423661926
Suffolk	iHS	7	49800000	49900000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	iHS	8	37100000	37200000	Meat_and_Carcass	internal_fat_amount	
Suffolk	iHS	9	42100000	42200000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	iHS	9	42100000	42200000	Meat_and_Carcass	muscle_weight_in_carcass	
Suffolk	iHS	9	42100000	42200000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	iHS	9	42100000	42200000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	iHS	10	12100000	12200000	Meat_and_Carcass	Carcass_fat_percentage	
Suffolk	iHS	10	12100000	12200000	Meat_and_Carcass	Carcass_bone_percentage	
Suffolk	iHS	10	12100000	12200000	Meat_and_Carcass	fat_weight_in_carcass	
Suffolk	iHS	10	12100000	12200000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	iHS	11	18800000	18900000	Meat_and_Carcass	internal_fat_amount	
Suffolk	iHS	11	18800000	18900000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	iHS	12	5.2e+07	52100000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	iHS	12	5.2e+07	52100000	Meat_and_Carcass	Carcass_fat_percentage	
Suffolk	iHS	13	51200000	51300000	Meat_and_Carcass	muscle_weight_in_carcass	
Suffolk	iHS	16	45900000	4.6e+07	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	iHS	16	45900000	4.6e+07	Meat_and_Carcass	Dressing_percentage	
Suffolk	iHS	16	45900000	4.6e+07	Meat_and_Carcass	Subcutaneous_fat_thickness	
Suffolk	iHS	16	45900000	4.6e+07	Meat_and_Carcass	Subcutaneous_fat_area	
Suffolk	iHS	18	17500000	17600000	Meat_and_Carcass	Meat_gadoleic_acid_content	
Suffolk	iHS	18	17500000	17600000	Meat_and_Carcass	Meat_docosaheptaenoic_acid_content	
Suffolk	iHS	18	54300000	54400000	Meat_and_Carcass	Muscle_depth_at_third_lumbar	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_oleic_acid_content	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_linolenic_acid_content	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_gadoleic_acid_content	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_stearic_acid_content	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_cis-vaccenic_acid_content	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_linoleic_acid_content	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_arachidonic_acid_content	
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	

Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_palmitic_acid_content
Suffolk	iHS	21	1.6e+07	16100000	Meat_and_Carcass	Meat_myristic_acid_content
Suffolk	iHS	26	18600000	18700000	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	iHS	1	193900000	1.94e+08	Milk	Milk_protein_yield
Suffolk	iHS	2	57800000	57900000	Milk	Milk_fat_percentage
Suffolk	iHS	2	125200000	125300000	Milk	milk_lactose_yield
Suffolk	iHS	2	1.65e+08	165100000	Milk	Milk_Yield
Suffolk	iHS	2	175300000	175400000	Milk	Milk_Yield
Suffolk	iHS	6	9.7e+07	97100000	Milk	Useful_yield_content
Suffolk	iHS	8	37100000	37200000	Milk	Milk_fat_percentage
Suffolk	iHS	11	18800000	18900000	Milk	Milk_Yield
Suffolk	iHS	11	18800000	18900000	Milk	Milk_protein_yield
Suffolk	iHS	11	18800000	18900000	Milk	milk_polyunsaturated_fatty_acid_content
Suffolk	iHS	11	18800000	18900000	Milk	Milk_yield_persistency
Suffolk	iHS	18	17500000	17600000	Milk	Milk_Yield
Suffolk	iHS	1	121900000	1.22e+08	Production	Body_weight
Suffolk	iHS	1	121900000	1.22e+08	Production	bone_density
Suffolk	iHS	2	57800000	57900000	Production	Body_weight
Suffolk	iHS	2	192200000	192300000	Production	Body_weight
Suffolk	iHS	2	210500000	210600000	Production	bone_density
Suffolk	iHS	2	210500000	210600000	Production	Body_weight
Suffolk	iHS	2	210500000	210600000	Production	Body_weight
Suffolk	iHS	5	26100000	26200000	Production	Body_weight
Suffolk	iHS	6	38900000	3.9e+07	Production	Body_weight
Suffolk	iHS	6	38900000	3.9e+07	Production	Body_weight
Suffolk	iHS	7	49800000	49900000	Production	Average_daily_gain
Suffolk	iHS	11	18800000	18900000	Production	Body_weight
Suffolk	iHS	16	45900000	4.6e+07	Production	Body_weight
Suffolk	iHS	21	1.6e+07	16100000	Production	Body_weight
Suffolk	iHS	21	1.6e+07	16100000	Production	Average_daily_gain
Suffolk	iHS	26	18600000	18700000	Production	Average_daily_gain

Suffolk	iHS	1	171700000	171900000	Reproduction	Reproductive_seasonality	
Suffolk	iHS	1	193500000	193600000	Reproduction	Reproductive_seasonality	
Suffolk	iHS	3	179900000	1.8e+08	Reproduction	Reproductive_seasonality	
Suffolk	iHS	18	17500000	17600000	Reproduction	Testes_weight	
Suffolk	iHS	1	171700000	171900000	Wool	Fleece_yield	
Suffolk	iHS	1	244800000	244900000	Wool	Fiber_curvature	
Suffolk	iHS	3	23500000	23600000	Wool	Staple_length	
Suffolk	iHS	4	94800000	94900000	Wool	mary_fiber_diameter_coefficient_of_variance	
Suffolk	iHS	6	38900000	3.9e+07	Wool	Mean_fiber_diameter	
Suffolk	iHS	7	49800000	49900000	Wool	mary_fiber_diameter_coefficient_of_variance	
Suffolk	iHS	7	49800000	49900000	Wool	Staple_length	
Suffolk	iHS	15	58500000	58600000	Wool	Staple_length	
Suffolk	iHS	18	17500000	17600000	Wool	Staple_length	
Texel	iHS	8	86900000	8.7e+07	Exterior	Teat_number	rs428046659
Texel	iHS	2	101900000	1.02e+08	Health	Trichostrongylus_adult_and_larva_count	
Texel	iHS	2	101900000	1.02e+08	Health	Somatic_cell_score	
Texel	iHS	2	218400000	218500000	Health	Worm_count	
Texel	iHS	2	218400000	218500000	Health	Change_in_hematocrit	
Texel	iHS	2	218400000	218500000	Health	Haemonchus_contortus_FEC	
Texel	iHS	3	108900000	1.09e+08	Health	facial_eczema_susceptibility	
Texel	iHS	3	1.27e+08	127100000	Health	Trichostrongylus_colubriformis_FEC	
Texel	iHS	3	1.27e+08	127100000	Health	Change_in_eosinophil_number	
Texel	iHS	3	163600000	163700000	Health	Strongyle_FEC	
Texel	iHS	3	2.06e+08	206100000	Health	Fecal_oocyst_count	
Texel	iHS	3	2.06e+08	206100000	Health	Fecal_egg_count	
Texel	iHS	3	213500000	213600000	Health	Blood_albumin_level	
Texel	iHS	1	182400000	182500000	Health	Salmonella_abortusovis_susceptibility	
Texel	iHS	1	199400000	199500000	Health	Fecal_egg_count	
Texel	iHS	1	210800000	210900000	Health	Trichostrongylus_colubriformis_FEC	
Texel	iHS	6	104600000	104700000	Health	Trichostrongylus_colubriformis_FEC	
Texel	iHS	6	104600000	104700000	Health	Entropion	rs424438792

Texel	iHS	8	49200000	49300000	Health	Trichostrongylus_adult_and_larva_count
Texel	iHS	8	86900000	8.7e+07	Health	Fecal_egg_count
Texel	iHS	10	69700000	69800000	Health	Fecal_egg_count
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_arachidonic_acid_content
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_linolenic_acid_content
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Hot_carcass_weight
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Ultimate_pH
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_color_a*
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_color_L*
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_color_b*
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_color_a*
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Shear_force
Texel	iHS	2	101900000	1.02e+08	Meat_and_Carcass	Meat_color_L*
Texel	iHS	2	128700000	128800000	Meat_and_Carcass	Loin_yield
Texel	iHS	2	185300000	185400000	Meat_and_Carcass	Hot_carcass_weight
Texel	iHS	3	108900000	1.09e+08	Meat_and_Carcass	internal_fat_amount
Texel	iHS	3	108900000	1.09e+08	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Texel	iHS	3	108900000	1.09e+08	Meat_and_Carcass	internal_fat_amount
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	muscle_weight_in_carcass
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Carcass_fat_percentage
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Bone_weight_in_carcass
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Backfat_at_third_lumbar
Texel	iHS	1	131900000	1.32e+08	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Texel	iHS	1	134100000	134200000	Meat_and_Carcass	Bone_weight_in_carcass
Texel	iHS	1	134100000	134200000	Meat_and_Carcass	Carcass_bone_percentage

Texel	iHS	1	182400000	182500000	Meat_and_Carcass	muscle_weight_in_carcass	
Texel	iHS	1	182400000	182500000	Meat_and_Carcass	Carcass_fat_percentage	
Texel	iHS	1	182400000	182500000	Meat_and_Carcass	muscle_weight_in_carcass	
Texel	iHS	1	182400000	182500000	Meat_and_Carcass	Lean_meat_yield_percentage	
Texel	iHS	1	199400000	199500000	Meat_and_Carcass	Muscle_depth_at_third_lumbar	
Texel	iHS	6	104600000	104700000	Meat_and_Carcass	fat_weight_in_carcass	
Texel	iHS	6	104600000	104700000	Meat_and_Carcass	Carcass_fat_percentage	
Texel	iHS	8	49200000	49300000	Meat_and_Carcass	internal_fat_amount	
Texel	iHS	9	74500000	74600000	Meat_and_Carcass	Longissimus_muscle_area	
Texel	iHS	9	74500000	74600000	Meat_and_Carcass	muscle_weight_in_carcass	
Texel	iHS	9	74500000	74600000	Meat_and_Carcass	Hot_carcass_weight	
Texel	iHS	9	74500000	74600000	Meat_and_Carcass	muscle_weight_in_carcass	
Texel	iHS	2	101900000	1.02e+08	Milk	Milk_fat_percentage	
Texel	iHS	2	125800000	125900000	Milk	milk_lactose_yield	
Texel	iHS	2	155700000	155800000	Milk	Milk_Yield	
Texel	iHS	2	185300000	185400000	Milk	Milk_Yield	
Texel	iHS	2	202600000	202700000	Milk	Milk_fat_yield_{180d}	rs412621830
Texel	iHS	3	132100000	132200000	Milk	Milk_protein_percentage	rs159833100
Texel	iHS	3	133700000	133800000	Milk	Milk_protein_percentage	
Texel	iHS	1	214400000	214500000	Milk	Milk_fat_percentage	rs430754132
Texel	iHS	1	223500000	223600000	Milk	Milk_fat_yield_{180d}	rs420758036
Texel	iHS	1	223500000	223600000	Milk	Milk_Yield_{180d}	rs420758036
Texel	iHS	8	49200000	49300000	Milk	Milk_fat_percentage	
Texel	iHS	8	86900000	8.7e+07	Milk	milk_lactose_yield	
Texel	iHS	2	101900000	1.02e+08	Production	Body_weight	
Texel	iHS	2	128700000	128800000	Production	Body_weight_(weaning)	
Texel	iHS	2	128700000	128800000	Production	Body_weight	
Texel	iHS	2	185300000	185400000	Production	Body_weight	
Texel	iHS	2	218400000	218500000	Production	bone_density	
Texel	iHS	2	218400000	218500000	Production	Body_weight	
Texel	iHS	3	132100000	132200000	Production	Body_weight	

Texel	iHS	3	133700000	133800000	Production	Body_weight
Texel	iHS	3	207800000	207900000	Production	Body_weight
Texel	iHS	1	131900000	1.32e+08	Production	Body_weight
Texel	iHS	1	131900000	1.32e+08	Production	bone_density
Texel	iHS	7	78300000	78400000	Production	bone_density
Texel	iHS	8	86900000	8.7e+07	Production	Body_weight
Texel	iHS	8	86900000	8.7e+07	Production	Body_weight
Texel	iHS	1	182400000	182500000	Reproduction	Reproductive_seasonality
Texel	iHS	1	199400000	199500000	Reproduction	Reproductive_seasonality
Texel	iHS	3	108900000	1.09e+08	Wool	Staple_length
Texel	iHS	1	182400000	182500000	Wool	Fleece_yield
Texel	iHS	1	208700000	208800000	Wool	Fleece_yield
Texel	iHS	4	104800000	104900000	Wool	mary_fiber_diameter_coefficient_of_variance
Texel	iHS	6	104600000	104700000	Wool	Mean_fiber_diameter
Texel	iHS	7	78300000	78400000	Wool	mary_fiber_diameter_coefficient_of_variance
Texel	iHS	7	78300000	78400000	Wool	Staple_length
Vendeen	iHS	7	12100000	12200000	Exterior	Teat_placement
Vendeen	iHS	10	11500000	11600000	Exterior	Horns
Vendeen	iHS	23	13700000	13800000	Exterior	Rear_leg_set
Vendeen	iHS	23	13700000	13800000	Exterior	Foot_angle
Vendeen	iHS	1	174200000	174300000	Health	Salmonella_abortusovis_susceptibility
Vendeen	iHS	1	212500000	212600000	Health	Fecal_egg_count
Vendeen	iHS	1	212500000	212600000	Health	Trichostrongylus_colubriformis_FEC
Vendeen	iHS	2	128700000	128800000	Health	Trichostrongylus_adult_and_larva_count
Vendeen	iHS	2	220100000	220200000	Health	Worm_count
Vendeen	iHS	2	220100000	220200000	Health	Change_in_hematocrit
Vendeen	iHS	2	220100000	220200000	Health	Haemonchus_contortus_FEC
Vendeen	iHS	3	22400000	22500000	Health	Haemonchus_contortus_FEC
Vendeen	iHS	3	23300000	23400000	Health	Trichostrongylus_colubriformis_FEC
Vendeen	iHS	3	116100000	116200000	Health	Trichostrongylus_colubriformis_FEC
Vendeen	iHS	3	139300000	139400000	Health	Change_in_eosinophil_number

Vendeen	iHS	6	65200000	65300000	Health	facial_eczema_susceptibility
Vendeen	iHS	6	95600000	95700000	Health	Trichostrongylus_colubriformis_FEC
Vendeen	iHS	7	49900000	5.00E+07	Health	Haemonchus_contortus_FEC
Vendeen	iHS	8	15400000	15500000	Health	Trichostrongylus_adult_and_larva_count
Vendeen	iHS	8	66600000	66700000	Health	Fecal_egg_count
Vendeen	iHS	9	10400000	10500000	Health	Fecal_egg_count
Vendeen	iHS	13	21800000	21900000	Health	Salmonella_abortusovis_susceptibility
Vendeen	iHS	14	21500000	21600000	Health	Nematodirus_FEC
Vendeen	iHS	14	21500000	21600000	Health	Fecal_egg_count
Vendeen	iHS	14	21500000	21600000	Health	Nematodirus_FEC
Vendeen	iHS	15	39500000	39600000	Health	facial_eczema_susceptibility
Vendeen	iHS	17	1.2e+07	12100000	Health	Fecal_egg_count
Vendeen	iHS	21	21500000	21600000	Health	Salmonella_abortusovis_susceptibility
Vendeen	iHS	22	13400000	13500000	Health	Somatic_cell_score
Vendeen	iHS	23	13700000	13800000	Health	Immunoglobulin_E_level
Vendeen	iHS	23	13700000	13800000	Health	Haemonchus_contortus_FEC
Vendeen	iHS	26	20300000	20400000	Health	Change_in_hematocrit
Vendeen	iHS	26	20300000	20400000	Health	Worm_count
Vendeen	iHS	26	20300000	20400000	Health	Eggs_per_worm
Vendeen	iHS	1	19700000	19800000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	iHS	1	19700000	19800000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	iHS	1	19700000	19800000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	iHS	1	103400000	103500000	Meat_and_Carcass	Bone_weight_in_carcass
Vendeen	iHS	1	103400000	103500000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Vendeen	iHS	1	103400000	103500000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Vendeen	iHS	1	103400000	103500000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Vendeen	iHS	1	103400000	103500000	Meat_and_Carcass	Backfat_at_third_lumbar
Vendeen	iHS	1	103400000	103500000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Vendeen	iHS	1	148100000	148200000	Meat_and_Carcass	Bone_weight_in_carcass
Vendeen	iHS	1	148100000	148200000	Meat_and_Carcass	Carcass_bone_percentage
Vendeen	iHS	1	174200000	174300000	Meat_and_Carcass	muscle_weight_in_carcass

Vendeen	iHS	1	174200000	174300000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	iHS	1	174200000	174300000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	iHS	1	174200000	174300000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	iHS	1	1.98e+08	198100000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Vendeen	iHS	2	21600000	21700000	Meat_and_Carcass	Meat_arachidonic_acid_content
Vendeen	iHS	2	21600000	21700000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Vendeen	iHS	2	21600000	21700000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Vendeen	iHS	2	21600000	21700000	Meat_and_Carcass	Meat_linolenic_acid_content
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Ultimate_pH
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Meat_color_a*
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Meat_color_L*
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Meat_color_b*
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Meat_color_a*
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Shear_force
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Meat_color_L*
Vendeen	iHS	2	128700000	128800000	Meat_and_Carcass	Loin_yield
Vendeen	iHS	2	183600000	183700000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	iHS	3	79700000	79800000	Meat_and_Carcass	internal_fat_amount
Vendeen	iHS	3	79700000	79800000	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Vendeen	iHS	3	116100000	116200000	Meat_and_Carcass	internal_fat_amount
Vendeen	iHS	6	18700000	18800000	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	iHS	6	18700000	18800000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	iHS	6	18700000	18800000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	iHS	6	18700000	18800000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	iHS	6	18700000	18800000	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	iHS	6	18700000	18800000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	iHS	6	18700000	18800000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	iHS	7	12100000	12200000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	iHS	7	12100000	12200000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	iHS	8	15400000	15500000	Meat_and_Carcass	internal_fat_amount

Vendeen	iHS	9	10400000	10500000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	iHS	9	10400000	10500000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	iHS	9	19100000	19200000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	iHS	9	46400000	46500000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	iHS	9	46400000	46500000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	iHS	10	11500000	11600000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	iHS	10	11500000	11600000	Meat_and_Carcass	Carcass_bone_percentage
Vendeen	iHS	10	11500000	11600000	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	iHS	10	11500000	11600000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	iHS	12	19500000	19600000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	iHS	12	19500000	19600000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	iHS	13	14900000	1.5e+07	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	iHS	14	21500000	21600000	Meat_and_Carcass	Bone_weight_in_carcass
Vendeen	iHS	14	21500000	21600000	Meat_and_Carcass	Dressing_percentage
Vendeen	iHS	14	21500000	21600000	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	iHS	14	21500000	21600000	Meat_and_Carcass	Dressing_percentage
Vendeen	iHS	16	14700000	14800000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	iHS	16	14700000	14800000	Meat_and_Carcass	Dressing_percentage
Vendeen	iHS	16	14700000	14800000	Meat_and_Carcass	Subcutaneous_fat_thickness
Vendeen	iHS	16	14700000	14800000	Meat_and_Carcass	Subcutaneous_fat_area
Vendeen	iHS	18	15400000	15500000	Meat_and_Carcass	Meat_gadoleic_acid_content
Vendeen	iHS	18	15400000	15500000	Meat_and_Carcass	Meat_docosaehaenoic_acid_content
Vendeen	iHS	18	51700000	51800000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_oleic_acid_content
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_linolenic_acid_content
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_gadoleic_acid_content
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_stearic_acid_content
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_cis-vaccenic_acid_content
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_linoleic_acid_content
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_arachidonic_acid_content
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content

Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_palmitic_acid_content	
Vendeen	iHS	21	21500000	21600000	Meat_and_Carcass	Meat_myristic_acid_content	
Vendeen	iHS	23	13700000	13800000	Meat_and_Carcass	Lean_meat_yield_percentage	
Vendeen	iHS	23	13700000	13800000	Meat_and_Carcass	muscle_weight_in_carcass	
Vendeen	iHS	23	13700000	13800000	Meat_and_Carcass	Carcass_fat_percentage	
Vendeen	iHS	23	13700000	13800000	Meat_and_Carcass	fat_weight_in_carcass	
Vendeen	iHS	23	13700000	13800000	Meat_and_Carcass	Hot_carcass_weight	
Vendeen	iHS	23	13700000	13800000	Meat_and_Carcass	Lean_meat_yield_percentage	
Vendeen	iHS	23	13700000	13800000	Meat_and_Carcass	fat_weight_in_carcass	
Vendeen	iHS	26	20300000	20400000	Meat_and_Carcass	muscle_weight_in_carcass	
Vendeen	iHS	1	103400000	103500000	Milk	Milk_fat_percentage	
Vendeen	iHS	1	103400000	103500000	Milk	Milk_Yield	
Vendeen	iHS	1	103400000	103500000	Milk	Milk_protein_percentage	
Vendeen	iHS	2	21600000	21700000	Milk	Milk_fat_percentage	
Vendeen	iHS	2	128700000	128800000	Milk	milk_lactose_yield	
Vendeen	iHS	2	1.66e+08	166100000	Milk	Milk_Yield	
Vendeen	iHS	2	183600000	183700000	Milk	Milk_Yield	
Vendeen	iHS	3	79700000	79800000	Milk	Milk_fat_percentage	
Vendeen	iHS	3	79700000	79800000	Milk	Milk_Yield	
Vendeen	iHS	3	139300000	139400000	Milk	Milk_protein_percentage	
Vendeen	iHS	3	170200000	170300000	Milk	Dried_curd_yield	rs400491563
Vendeen	iHS	6	86400000	86500000	Milk	Useful_yield_content	
Vendeen	iHS	7	40800000	40900000	Milk	Milk_protein_percentage	
Vendeen	iHS	8	38100000	38200000	Milk	Milk_fat_percentage	
Vendeen	iHS	9	10400000	10500000	Milk	Useful_yield_content	
Vendeen	iHS	12	19500000	19600000	Milk	Milk_Yield	
Vendeen	iHS	12	19900000	2.00E+07	Milk	Cheese_yield	
Vendeen	iHS	13	14900000	1.5e+07	Milk	Milk_fat_yield_{180d}	rs419593254
Vendeen	iHS	18	15400000	15500000	Milk	Milk_Yield	
Vendeen	iHS	20	13100000	13200000	Milk	Milk_Yield	
Vendeen	iHS	20	13100000	13200000	Milk	Milk_Yield	

Vendeen	iHS	20	13100000	13200000	Milk	Milk_protein_yield	
Vendeen	iHS	20	13100000	13200000	Milk	milk_lactose_yield	
Vendeen	iHS	20	13100000	13200000	Milk	Milk_fat_yield	
Vendeen	iHS	20	13100000	13200000	Milk	Milk_Yield_{180d}	rs407010170
Vendeen	iHS	1	103400000	103500000	Production	Body_weight	
Vendeen	iHS	2	128700000	128800000	Production	Body_weight	
Vendeen	iHS	2	128700000	128800000	Production	Body_weight_(weaning)	
Vendeen	iHS	2	128700000	128800000	Production	Body_weight	
Vendeen	iHS	2	183600000	183700000	Production	Body_weight	
Vendeen	iHS	2	220100000	220200000	Production	bone_density	
Vendeen	iHS	2	220100000	220200000	Production	Body_weight	
Vendeen	iHS	3	139300000	139400000	Production	Body_weight	
Vendeen	iHS	3	139300000	139400000	Production	Body_weight	
Vendeen	iHS	4	39300000	39400000	Production	Body_weight	
Vendeen	iHS	6	18700000	18800000	Production	Body_weight	
Vendeen	iHS	7	49900000	5.00E+07	Production	Average_daily_gain	
Vendeen	iHS	14	21500000	21600000	Production	Total_bone	
Vendeen	iHS	14	21500000	21600000	Production	Total_bone	
Vendeen	iHS	14	21500000	21600000	Production	bone_density	
Vendeen	iHS	16	14700000	14800000	Production	Body_weight	
Vendeen	iHS	16	14700000	14800000	Production	Body_weight	
Vendeen	iHS	21	21500000	21600000	Production	Body_weight	
Vendeen	iHS	21	21500000	21600000	Production	Average_daily_gain	
Vendeen	iHS	23	13700000	13800000	Production	Average_daily_gain	
Vendeen	iHS	23	13700000	13800000	Production	Body_weight	
Vendeen	iHS	26	20300000	20400000	Production	Average_daily_gain	
Vendeen	iHS	1	174200000	174300000	Reproduction	Reproductive_seasonality	
Vendeen	iHS	1	1.98e+08	198100000	Reproduction	Reproductive_seasonality	
Vendeen	iHS	17	16800000	16900000	Reproduction	Reproductive_seasonality	
Vendeen	iHS	18	15400000	15500000	Reproduction	Testes_weight	
Vendeen	iHS	20	13100000	13200000	Reproduction	Testes_weight	

Vendeen	iHS	20	13100000	13200000	Reproduction	Testes_weight	
Vendeen	iHS	25	20100000	20200000	Reproduction	Testes_weight	
Vendeen	iHS	1	174200000	174300000	Wool	Fleece_yield	
Vendeen	iHS	1	212500000	212600000	Wool	Fleece_yield	
Vendeen	iHS	3	22400000	22500000	Wool	Staple_length	
Vendeen	iHS	4	39300000	39400000	Wool	mary_fiber_diameter_coefficient_of_variance	
Vendeen	iHS	6	18700000	18800000	Wool	Mean_fiber_diameter	
Vendeen	iHS	7	12100000	12200000	Wool	mary_fiber_diameter_coefficient_of_variance	
Vendeen	iHS	7	12100000	12200000	Wool	Staple_length	
Vendeen	iHS	15	39500000	39600000	Wool	Staple_length	
Vendeen	iHS	18	15400000	15500000	Wool	Staple_length	
Vendeen	iHS	18	17700000	17800000	Wool	Fleece_yield	rs428693835
Vendeen	iHS	25	20100000	20200000	Wool	Mean_fiber_diameter	
Vendeen	iHS	25	20100000	20200000	Wool	mary_fiber_diameter_coefficient_of_variance	
Vendeen	iHS	25	20100000	20200000	Wool	Staple_length	
Belclare	Tajimas'D	2	115000000	115100000	Exterior	Horn_type	rs416045857
Belclare	Tajimas'D	5	56800000	56900000	Exterior	Foot_angle	
Belclare	Tajimas'D	7	12600000	12700000	Exterior	Teat_placement	
Belclare	Tajimas'D	10	6700000	6800000	Exterior	Horns	
Belclare	Tajimas'D	15	1500000	1600000	Exterior	udder_shape	
Belclare	Tajimas'D	17	17100000	17200000	Exterior	Teat_number	rs414657709
Belclare	Tajimas'D	26	38600000	38700000	Exterior	Stature	
Belclare	Tajimas'D	26	38600000	38700000	Exterior	udder_attachment	
Belclare	Tajimas'D	2	91300000	91400000	Health	Trichostrongylus_adult_and_larva_count	
Belclare	Tajimas'D	2	91300000	91400000	Health	Somatic_cell_score	
Belclare	Tajimas'D	2	115000000	115100000	Health	Nematodirus_FEC	
Belclare	Tajimas'D	2	213500000	213600000	Health	Worm_count	
Belclare	Tajimas'D	2	213500000	213600000	Health	Change_in_hematocrit	
Belclare	Tajimas'D	2	213500000	213600000	Health	Haemonchus_contortus_FEC	
Belclare	Tajimas'D	1	176400000	176500000	Health	Salmonella_abortusovis_susceptibility	
Belclare	Tajimas'D	1	204900000	2.05e+08	Health	Fecal_egg_count	

Belclare	Tajimas'D	3	25700000	25800000	Health	Haemonchus_contortus_FEC
Belclare	Tajimas'D	3	25700000	25800000	Health	Trichostrongylus_colubriformis_FEC
Belclare	Tajimas'D	3	108600000	108700000	Health	facial_eczema_susceptibility
Belclare	Tajimas'D	3	114000000	114100000	Health	Trichostrongylus_colubriformis_FEC
Belclare	Tajimas'D	3	198500000	198600000	Health	Fecal_oocyst_count
Belclare	Tajimas'D	3	198500000	198600000	Health	Fecal_egg_count
Belclare	Tajimas'D	4	22200000	22300000	Health	Haemonchus_contortus_FEC
Belclare	Tajimas'D	6	92900000	9.3e+07	Health	Trichostrongylus_colubriformis_FEC
Belclare	Tajimas'D	7	48000000	48100000	Health	Haemonchus_contortus_FEC
Belclare	Tajimas'D	8	4000000	4100000	Health	Trichostrongylus_adult_and_larva_count
Belclare	Tajimas'D	8	68400000	68500000	Health	Fecal_egg_count
Belclare	Tajimas'D	10	32300000	32400000	Health	Fecal_egg_count
Belclare	Tajimas'D	10	32300000	32400000	Health	Somatic_cell_score
Belclare	Tajimas'D	11	27400000	27500000	Health	Trichostrongylus_adult_and_larva_count
Belclare	Tajimas'D	12	71300000	71400000	Health	Trichostrongylus_colubriformis_FEC
Belclare	Tajimas'D	14	48700000	48800000	Health	Nematodirus_FEC
Belclare	Tajimas'D	14	48700000	48800000	Health	Nematodirus_FEC
Belclare	Tajimas'D	14	48700000	48800000	Health	Nematodirus_FEC
Belclare	Tajimas'D	14	48700000	48800000	Health	Somatic_cell_score
Belclare	Tajimas'D	15	26600000	26700000	Health	Fecal_egg_count
Belclare	Tajimas'D	16	2300000	2400000	Health	Fecal_egg_count
Belclare	Tajimas'D	17	8300000	8400000	Health	Fecal_egg_count
Belclare	Tajimas'D	18	3200000	3300000	Health	Hematocrit
Belclare	Tajimas'D	18	42200000	42300000	Health	Haemonchus_contortus_FEC
Belclare	Tajimas'D	20	24400000	24500000	Health	Salmonella_abortusovis_susceptibility
Belclare	Tajimas'D	20	24400000	24500000	Health	Immunoglobulin_A_level
Belclare	Tajimas'D	20	24400000	24500000	Health	Salmonella_abortusovis_susceptibility
Belclare	Tajimas'D	21	26600000	26700000	Health	Salmonella_abortusovis_susceptibility
Belclare	Tajimas'D	21	26600000	26700000	Health	Salmonella_abortusovis_susceptibility
Belclare	Tajimas'D	21	35200000	35300000	Health	Change_in_eosinophil_number
Belclare	Tajimas'D	22	13400000	13500000	Health	Somatic_cell_score

Belclare	Tajimas'D	22	29700000	29800000	Health	Trichostrongylus_colubriformis_FEC
Belclare	Tajimas'D	26	13200000	13300000	Health	Change_in_hematocrit
Belclare	Tajimas'D	26	13200000	13300000	Health	Worm_count
Belclare	Tajimas'D	26	13200000	13300000	Health	Eggs_per_worm
Belclare	Tajimas'D	26	38600000	38700000	Health	Fecal_egg_count
Belclare	Tajimas'D	2	9500000	9600000	Meat_and_Carcass	Meat_arachidonic_acid_content
Belclare	Tajimas'D	2	9500000	9600000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Belclare	Tajimas'D	2	9500000	9600000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Belclare	Tajimas'D	2	9500000	9600000	Meat_and_Carcass	Meat_linolenic_acid_content
Belclare	Tajimas'D	2	91300000	91400000	Meat_and_Carcass	Hot_carcass_weight
Belclare	Tajimas'D	2	91300000	91400000	Meat_and_Carcass	Ultimate_pH
Belclare	Tajimas'D	2	91300000	91400000	Meat_and_Carcass	Meat_color_a*
Belclare	Tajimas'D	2	91300000	91400000	Meat_and_Carcass	Meat_color_L*
Belclare	Tajimas'D	2	91300000	91400000	Meat_and_Carcass	Meat_color_b*
Belclare	Tajimas'D	2	91300000	91400000	Meat_and_Carcass	Meat_color_a*
Belclare	Tajimas'D	2	115000000	115100000	Meat_and_Carcass	Shear_force
Belclare	Tajimas'D	2	115000000	115100000	Meat_and_Carcass	Meat_color_L*
Belclare	Tajimas'D	2	115000000	115100000	Meat_and_Carcass	Foreleg_length
Belclare	Tajimas'D	2	205900000	2.06e+08	Meat_and_Carcass	Hot_carcass_weight
Belclare	Tajimas'D	1	15300000	15400000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	Tajimas'D	1	15300000	15400000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	Tajimas'D	1	15300000	15400000	Meat_and_Carcass	Carcass_fat_percentage
Belclare	Tajimas'D	1	46300000	46400000	Meat_and_Carcass	Bone_weight_in_carcass
Belclare	Tajimas'D	1	46300000	46400000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Belclare	Tajimas'D	1	46300000	46400000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Belclare	Tajimas'D	1	46300000	46400000	Meat_and_Carcass	Carcass_bone_percentage
Belclare	Tajimas'D	1	59800000	59900000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Belclare	Tajimas'D	1	89200000	89300000	Meat_and_Carcass	Backfat_at_third_lumbar
Belclare	Tajimas'D	1	89200000	89300000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Belclare	Tajimas'D	1	141100000	141200000	Meat_and_Carcass	Bone_weight_in_carcass
Belclare	Tajimas'D	1	141100000	141200000	Meat_and_Carcass	Carcass_bone_percentage

Belclare	Tajimas'D	1	176400000	176500000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	Tajimas'D	1	176400000	176500000	Meat_and_Carcass	Carcass_fat_percentage
Belclare	Tajimas'D	1	176400000	176500000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	Tajimas'D	1	176400000	176500000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	Tajimas'D	1	194600000	194700000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Belclare	Tajimas'D	3	77400000	77500000	Meat_and_Carcass	internal_fat_amount
Belclare	Tajimas'D	3	77400000	77500000	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Belclare	Tajimas'D	3	108600000	108700000	Meat_and_Carcass	internal_fat_amount
Belclare	Tajimas'D	5	2400000	2500000	Meat_and_Carcass	Meat_palmitoleic_acid_content
Belclare	Tajimas'D	6	92900000	9.3e+07	Meat_and_Carcass	fat_weight_in_carcass
Belclare	Tajimas'D	6	92900000	9.3e+07	Meat_and_Carcass	Carcass_fat_percentage
Belclare	Tajimas'D	6	92900000	9.3e+07	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	Tajimas'D	7	12600000	12700000	Meat_and_Carcass	Longissimus_muscle_area
Belclare	Tajimas'D	7	12600000	12700000	Meat_and_Carcass	Longissimus_muscle_area
Belclare	Tajimas'D	8	4000000	4100000	Meat_and_Carcass	internal_fat_amount
Belclare	Tajimas'D	9	60400000	60500000	Meat_and_Carcass	Longissimus_muscle_area
Belclare	Tajimas'D	9	60400000	60500000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	Tajimas'D	9	60400000	60500000	Meat_and_Carcass	Hot_carcass_weight
Belclare	Tajimas'D	9	60400000	60500000	Meat_and_Carcass	Longissimus_muscle_area
Belclare	Tajimas'D	9	60400000	60500000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	Tajimas'D	10	6700000	6800000	Meat_and_Carcass	Carcass_fat_percentage
Belclare	Tajimas'D	10	6700000	6800000	Meat_and_Carcass	Carcass_bone_percentage
Belclare	Tajimas'D	10	6700000	6800000	Meat_and_Carcass	fat_weight_in_carcass
Belclare	Tajimas'D	10	6700000	6800000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	Tajimas'D	11	27400000	27500000	Meat_and_Carcass	internal_fat_amount
Belclare	Tajimas'D	11	27400000	27500000	Meat_and_Carcass	Hot_carcass_weight
Belclare	Tajimas'D	12	35500000	35600000	Meat_and_Carcass	Lean_meat_yield_percentage
Belclare	Tajimas'D	12	35500000	35600000	Meat_and_Carcass	Carcass_fat_percentage
Belclare	Tajimas'D	13	9200000	9300000	Meat_and_Carcass	muscle_weight_in_carcass
Belclare	Tajimas'D	14	48700000	48800000	Meat_and_Carcass	Bone_weight_in_carcass
Belclare	Tajimas'D	15	72200000	72300000	Meat_and_Carcass	Hind_leg_length

Belclare	Tajimas'D	16	2300000	2400000	Meat_and_Carcass	Lean_meat_yield_percentage	
Belclare	Tajimas'D	16	2300000	2400000	Meat_and_Carcass	Dressing_percentage	
Belclare	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Subcutaneous_fat_thickness	
Belclare	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Subcutaneous_fat_area	
Belclare	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Subcutaneous_fat_area	
Belclare	Tajimas'D	16	63500000	63600000	Meat_and_Carcass	Lean_meat_yield_percentage	
Belclare	Tajimas'D	18	42200000	42300000	Meat_and_Carcass	Meat_gadoleic_acid_content	
Belclare	Tajimas'D	18	42200000	42300000	Meat_and_Carcass	Meat_docosaheptaenoic_acid_content	
Belclare	Tajimas'D	18	59500000	59600000	Meat_and_Carcass	Longissimus_muscle_area	
Belclare	Tajimas'D	18	59500000	59600000	Meat_and_Carcass	Longissimus_muscle_depth	
Belclare	Tajimas'D	18	59500000	59600000	Meat_and_Carcass	Loin_weight	
Belclare	Tajimas'D	18	59500000	59600000	Meat_and_Carcass	Longissimus_muscle_width	
Belclare	Tajimas'D	19	8000000	8100000	Meat_and_Carcass	Dressing_percentage	
Belclare	Tajimas'D	20	24400000	24500000	Meat_and_Carcass	Metacarpal_length	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_oleic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_linolenic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_gadoleic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_stearic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_cis-vaccenic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_linoleic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_arachidonic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_palmitic_acid_content	
Belclare	Tajimas'D	21	26600000	26700000	Meat_and_Carcass	Meat_myristic_acid_content	
Belclare	Tajimas'D	24	6500000	6600000	Meat_and_Carcass	Bone_weight_in_carcass	
Belclare	Tajimas'D	26	13200000	13300000	Meat_and_Carcass	muscle_weight_in_carcass	
Belclare	Tajimas'D	2	19400000	19500000	Milk	Milk_fat_percentage	
Belclare	Tajimas'D	2	119500000	119600000	Milk	milk_lactose_yield	
Belclare	Tajimas'D	2	140700000	140800000	Milk	Milk_Yield	
Belclare	Tajimas'D	3	46300000	46400000	Milk	Milk_fat_yield_{180d}	rs417941351
Belclare	Tajimas'D	3	46300000	46400000	Milk	Milk_Yield_{180d}	rs429253677

Belclare	Tajimas'D	3	77400000	77500000	Milk	Milk_fat_percentage	
Belclare	Tajimas'D	3	77400000	77500000	Milk	Milk_Yield	
Belclare	Tajimas'D	3	77400000	77500000	Milk	milk_lactose_yield	
Belclare	Tajimas'D	6	92900000	9.3e+07	Milk	Useful_yield_content	
Belclare	Tajimas'D	7	48000000	48100000	Milk	Milk_protein_percentage	
Belclare	Tajimas'D	7	96000000	96100000	Milk	Milk_fat_yield_{180d}	rs410136138
Belclare	Tajimas'D	8	37100000	37200000	Milk	Milk_fat_percentage	
Belclare	Tajimas'D	8	84700000	84800000	Milk	milk_lactose_yield	
Belclare	Tajimas'D	9	75000000	75100000	Milk	Milk_fat_yield	
Belclare	Tajimas'D	11	27400000	27500000	Milk	Milk_Yield	
Belclare	Tajimas'D	11	27400000	27500000	Milk	Milk_protein_yield	
Belclare	Tajimas'D	11	27400000	27500000	Milk	milk_polyunsaturated_fatty_acid_content	
Belclare	Tajimas'D	11	27400000	27500000	Milk	Milk_yield_persistency	
Belclare	Tajimas'D	12	35500000	35600000	Milk	Milk_Yield	
Belclare	Tajimas'D	14	48700000	48800000	Milk	milk_lactose_yield	
Belclare	Tajimas'D	20	24400000	24500000	Milk	Milk_Yield	
Belclare	Tajimas'D	20	24400000	24500000	Milk	Milk_Yield	
Belclare	Tajimas'D	20	24400000	24500000	Milk	Milk_protein_yield	
Belclare	Tajimas'D	20	24400000	24500000	Milk	milk_lactose_yield	
Belclare	Tajimas'D	20	24400000	24500000	Milk	Milk_fat_yield	
Belclare	Tajimas'D	24	6500000	6600000	Milk	Milk_Yield	
Belclare	Tajimas'D	24	6500000	6600000	Milk	Milk_protein_persistency	
Belclare	Tajimas'D	25	14300000	14400000	Milk	Milk_fat_percentage	
Belclare	Tajimas'D	25	14300000	14400000	Milk	Useful_yield_content	
Belclare	Tajimas'D	2	91300000	91400000	Production	Body_weight	
Belclare	Tajimas'D	2	205900000	2.06e+08	Production	Body_weight	
Belclare	Tajimas'D	2	213500000	213600000	Production	bone_density	
Belclare	Tajimas'D	2	213500000	213600000	Production	Body_weight	
Belclare	Tajimas'D	1	15300000	15400000	Production	Body_weight	rs429410575
Belclare	Tajimas'D	1	141100000	141200000	Production	Body_weight	
Belclare	Tajimas'D	3	108600000	108700000	Production	Chest_girth	rs430810656

Belclare	Tajimas'D	3	108600000	108700000	Production	Body_weight	rs430810656
Belclare	Tajimas'D	3	108600000	108700000	Production	Average_daily_gain	rs401775061
Belclare	Tajimas'D	4	22200000	22300000	Production	Body_weight	
Belclare	Tajimas'D	4	29200000	29300000	Production	Body_weight	
Belclare	Tajimas'D	5	2400000	2500000	Production	Body_weight	
Belclare	Tajimas'D	5	90000000	90100000	Production	Body_weight	
Belclare	Tajimas'D	5	90000000	90100000	Production	Age_at_maximum_daily_gain	
Belclare	Tajimas'D	7	76400000	76500000	Production	bone_density	
Belclare	Tajimas'D	8	84700000	84800000	Production	Body_weight	
Belclare	Tajimas'D	8	84700000	84800000	Production	Body_weight	
Belclare	Tajimas'D	11	27400000	27500000	Production	Body_weight	
Belclare	Tajimas'D	12	35500000	35600000	Production	bone_density	
Belclare	Tajimas'D	14	48700000	48800000	Production	Body_weight	
Belclare	Tajimas'D	14	48700000	48800000	Production	Age_at_maximum_daily_gain	
Belclare	Tajimas'D	14	48700000	48800000	Production	Average_daily_gain	
Belclare	Tajimas'D	16	2300000	2400000	Production	Body_weight	
Belclare	Tajimas'D	18	42200000	42300000	Production	Average_daily_gain	
Belclare	Tajimas'D	21	26600000	26700000	Production	Body_weight	
Belclare	Tajimas'D	21	26600000	26700000	Production	Average_daily_gain	
Belclare	Tajimas'D	26	13200000	13300000	Production	Average_daily_gain	
Belclare	Tajimas'D	1	176400000	176500000	Reproduction	Reproductive_seasonality	
Belclare	Tajimas'D	1	194600000	194700000	Reproduction	Reproductive_seasonality	
Belclare	Tajimas'D	10	6700000	6800000	Reproduction	Twinning	rs407696726
Belclare	Tajimas'D	10	6700000	6800000	Reproduction	Total_lambs_born	rs407696726
Belclare	Tajimas'D	10	32300000	32400000	Reproduction	Testes_weight	
Belclare	Tajimas'D	12	71300000	71400000	Reproduction	Reproductive_seasonality	
Belclare	Tajimas'D	17	17100000	17200000	Reproduction	Reproductive_seasonality	
Belclare	Tajimas'D	18	3200000	3300000	Reproduction	Testes_weight	
Belclare	Tajimas'D	19	8000000	8100000	Reproduction	Reproductive_seasonality	
Belclare	Tajimas'D	20	24400000	24500000	Reproduction	Testes_weight	
Belclare	Tajimas'D	24	6500000	6600000	Reproduction	Testes_weight	

Belclare	Tajimas'D	24	6500000	6600000	Reproduction	Testes_weight	
Belclare	Tajimas'D	25	14300000	14400000	Reproduction	Testes_weight	
Belclare	Tajimas'D	1	176400000	176500000	Wool	Fleece_yield	
Belclare	Tajimas'D	1	204900000	2.05e+08	Wool	Fleece_yield	
Belclare	Tajimas'D	3	25700000	25800000	Wool	Staple_length	
Belclare	Tajimas'D	4	900000	1.00E+06	Wool	mary_fiber_diameter_coefficient_of_variance	
Belclare	Tajimas'D	5	64600000	64700000	Wool	Staple_length	rs405764380
Belclare	Tajimas'D	6	92900000	9.3e+07	Wool	Mean_fiber_diameter	
Belclare	Tajimas'D	7	12600000	12700000	Wool	mary_fiber_diameter_coefficient_of_variance	
Belclare	Tajimas'D	7	12600000	12700000	Wool	Staple_length	
Belclare	Tajimas'D	15	72200000	72300000	Wool	Staple_length	
Belclare	Tajimas'D	18	42200000	42300000	Wool	Staple_length	
Belclare	Tajimas'D	25	14300000	14400000	Wool	Mean_fiber_diameter	
Belclare	Tajimas'D	25	14300000	14400000	Wool	mary_fiber_diameter_coefficient_of_variance	
Belclare	Tajimas'D	25	14300000	14400000	Wool	Greasy_fleece_weight	
Belclare	Tajimas'D	25	14300000	14400000	Wool	Staple_length	
Charollais	Tajimas'D	5	46200000	46300000	Exterior	Foot_angle	
Charollais	Tajimas'D	13	7700000	7800000	Exterior	Teat_number	rs417649440
Charollais	Tajimas'D	23	16900000	1.7e+07	Exterior	Rear_leg_set	
Charollais	Tajimas'D	23	16900000	1.7e+07	Exterior	Foot_angle	
Charollais	Tajimas'D	25	15500000	15600000	Exterior	Teat_number	rs416080287
Charollais	Tajimas'D	1	38700000	38800000	Health	Mean_corpuscular_hemoglobin_content	rs409367364
Charollais	Tajimas'D	1	185400000	185500000	Health	Salmonella_abortusovis_susceptibility	
Charollais	Tajimas'D	1	221500000	221600000	Health	Trichostrongylus_colubriformis_FEC	
Charollais	Tajimas'D	1	262300000	262400000	Health	Mean_corpuscular_hemoglobin_content	rs427425780
Charollais	Tajimas'D	8	2200000	2300000	Health	Trichostrongylus_adult_and_larva_count	
Charollais	Tajimas'D	8	83600000	83700000	Health	Fecal_egg_count	
Charollais	Tajimas'D	2	67700000	67800000	Health	Trichostrongylus_adult_and_larva_count	
Charollais	Tajimas'D	2	91800000	91900000	Health	Somatic_cell_score	
Charollais	Tajimas'D	2	214700000	214800000	Health	Worm_count	
Charollais	Tajimas'D	2	214700000	214800000	Health	Change_in_hematocrit	

Charollais	Tajimas'D	2	214700000	214800000	Health	Haemonchus_contortus_FEC	
Charollais	Tajimas'D	3	19700000	19800000	Health	Haemonchus_contortus_FEC	
Charollais	Tajimas'D	3	25300000	25400000	Health	Trichostrongylus_colubriformis_FEC	
Charollais	Tajimas'D	3	107500000	107600000	Health	facial_eczema_susceptibility	
Charollais	Tajimas'D	3	118700000	118800000	Health	Trichostrongylus_colubriformis_FEC	
Charollais	Tajimas'D	3	126900000	1.27e+08	Health	Change_in_eosinophil_number	
Charollais	Tajimas'D	3	146000000	146100000	Health	Immunoglobulin_A_level	
Charollais	Tajimas'D	3	158900000	1.59e+08	Health	Strongyle_FEC	
Charollais	Tajimas'D	3	178600000	178700000	Health	Hematocrit	
Charollais	Tajimas'D	3	195300000	195400000	Health	Nematodirus_FEC	
Charollais	Tajimas'D	3	195300000	195400000	Health	Fecal_oocyst_count	
Charollais	Tajimas'D	3	195300000	195400000	Health	Fecal_egg_count	
Charollais	Tajimas'D	3	206300000	206400000	Health	Haemonchus_contortus_resistance	rs592779209
Charollais	Tajimas'D	3	206300000	206400000	Health	Fecal_egg_count	rs407346502
Charollais	Tajimas'D	4	26400000	26500000	Health	Haemonchus_contortus_FEC	
Charollais	Tajimas'D	4	116700000	116800000	Health	ean_corpuscular_hemoglobin_concentrati	rs404264735
Charollais	Tajimas'D	6	44300000	44400000	Health	facial_eczema_susceptibility	
Charollais	Tajimas'D	6	44300000	44400000	Health	Fecal_egg_count	
Charollais	Tajimas'D	7	56000000	56100000	Health	Haemonchus_contortus_FEC	
Charollais	Tajimas'D	9	7900000	8.00E+06	Health	Fecal_egg_count	
Charollais	Tajimas'D	9	26900000	2.7e+07	Health	Salmonella_abortusovis_susceptibility	
Charollais	Tajimas'D	10	57600000	57700000	Health	Fecal_egg_count	
Charollais	Tajimas'D	11	13900000	1.4e+07	Health	Trichostrongylus_adult_and_larva_count	
Charollais	Tajimas'D	13	69600000	69700000	Health	Fecal_egg_count	
Charollais	Tajimas'D	15	31900000	3.2e+07	Health	facial_eczema_susceptibility	
Charollais	Tajimas'D	17	67200000	67300000	Health	Somatic_cell_score	
Charollais	Tajimas'D	18	9900000	1.00E+07	Health	Hematocrit	
Charollais	Tajimas'D	21	26600000	26700000	Health	Salmonella_abortusovis_susceptibility	
Charollais	Tajimas'D	21	26600000	26700000	Health	Salmonella_abortusovis_susceptibility	
Charollais	Tajimas'D	23	16900000	1.7e+07	Health	Immunoglobulin_E_level	
Charollais	Tajimas'D	23	16900000	1.7e+07	Health	Haemonchus_contortus_FEC	

Charollais	Tajimas'D	23	16900000	1.7e+07	Health	Immunoglobulin_G_level	
Charollais	Tajimas'D	25	14100000	14200000	Health	Fecal_egg_count	rs588692006, rs40291
Charollais	Tajimas'D	1	38700000	38800000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	Tajimas'D	1	38700000	38800000	Meat_and_Carcass	Lean_meat_yield_percentage	
Charollais	Tajimas'D	1	38700000	38800000	Meat_and_Carcass	Carcass_fat_percentage	
Charollais	Tajimas'D	1	38700000	38800000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	Tajimas'D	1	38700000	38800000	Meat_and_Carcass	Bone_weight_in_carcass	
Charollais	Tajimas'D	1	142200000	142400000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Charollais	Tajimas'D	1	142200000	142400000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content	
Charollais	Tajimas'D	1	142200000	142400000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content	
Charollais	Tajimas'D	1	142200000	142400000	Meat_and_Carcass	Backfat_at_third_lumbar	
Charollais	Tajimas'D	1	142200000	142400000	Meat_and_Carcass	Muscle_depth_at_third_lumbar	
Charollais	Tajimas'D	1	142200000	142400000	Meat_and_Carcass	Bone_weight_in_carcass	
Charollais	Tajimas'D	1	142200000	142400000	Meat_and_Carcass	Carcass_bone_percentage	
Charollais	Tajimas'D	1	166400000	166500000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	Tajimas'D	1	166400000	166500000	Meat_and_Carcass	Carcass_fat_percentage	
Charollais	Tajimas'D	1	185400000	185500000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	Tajimas'D	1	185400000	185500000	Meat_and_Carcass	Lean_meat_yield_percentage	
Charollais	Tajimas'D	1	194600000	194700000	Meat_and_Carcass	Muscle_depth_at_third_lumbar	
Charollais	Tajimas'D	8	2200000	2300000	Meat_and_Carcass	internal_fat_amount	
Charollais	Tajimas'D	2	29700000	29800000	Meat_and_Carcass	Meat_arachidonic_acid_content	
Charollais	Tajimas'D	2	29700000	29800000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content	
Charollais	Tajimas'D	2	29700000	29800000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Charollais	Tajimas'D	2	29700000	29800000	Meat_and_Carcass	Meat_linolenic_acid_content	
Charollais	Tajimas'D	2	67700000	67800000	Meat_and_Carcass	Hot_carcass_weight	
Charollais	Tajimas'D	2	91800000	91900000	Meat_and_Carcass	Ultimate_pH	
Charollais	Tajimas'D	2	91800000	91900000	Meat_and_Carcass	Meat_color_a*	
Charollais	Tajimas'D	2	91800000	91900000	Meat_and_Carcass	Meat_color_L*	
Charollais	Tajimas'D	2	91800000	91900000	Meat_and_Carcass	Meat_color_b*	
Charollais	Tajimas'D	2	91800000	91900000	Meat_and_Carcass	Meat_color_a*	
Charollais	Tajimas'D	2	99700000	99800000	Meat_and_Carcass	Shear_force	

Charollais	Tajimas'D	2	99700000	99800000	Meat_and_Carcass	Meat_color_L*	
Charollais	Tajimas'D	2	134000000	134100000	Meat_and_Carcass	Loin_fat_thickness	
Charollais	Tajimas'D	2	134000000	134100000	Meat_and_Carcass	Longissimus_muscle_area	
Charollais	Tajimas'D	2	191000000	191100000	Meat_and_Carcass	Hot_carcass_weight	
Charollais	Tajimas'D	3	70000000	70100000	Meat_and_Carcass	internal_fat_amount	
Charollais	Tajimas'D	3	70000000	70100000	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content	
Charollais	Tajimas'D	3	107500000	107600000	Meat_and_Carcass	internal_fat_amount	
Charollais	Tajimas'D	5	46200000	46300000	Meat_and_Carcass	Meat_palmitoleic_acid_content	
Charollais	Tajimas'D	6	44300000	44400000	Meat_and_Carcass	fat_weight_in_carcass	
Charollais	Tajimas'D	6	44300000	44400000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	Tajimas'D	6	44300000	44400000	Meat_and_Carcass	Carcass_fat_percentage	
Charollais	Tajimas'D	6	44300000	44400000	Meat_and_Carcass	Lean_meat_yield_percentage	
Charollais	Tajimas'D	6	44300000	44400000	Meat_and_Carcass	Hot_carcass_weight	
Charollais	Tajimas'D	6	44300000	44400000	Meat_and_Carcass	Hot_carcass_weight	
Charollais	Tajimas'D	7	20800000	20900000	Meat_and_Carcass	Longissimus_muscle_area	
Charollais	Tajimas'D	7	20800000	20900000	Meat_and_Carcass	Longissimus_muscle_area	
Charollais	Tajimas'D	9	5200000	5300000	Meat_and_Carcass	Longissimus_muscle_area	
Charollais	Tajimas'D	9	5200000	5300000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	Tajimas'D	9	12600000	12700000	Meat_and_Carcass	Hot_carcass_weight	
Charollais	Tajimas'D	9	40400000	40500000	Meat_and_Carcass	Longissimus_muscle_area	
Charollais	Tajimas'D	9	72500000	72600000	Meat_and_Carcass	muscle_weight_in_carcass	
Charollais	Tajimas'D	9	79900000	8.00E+07	Meat_and_Carcass	Number_of_ribs	rs424881680
Charollais	Tajimas'D	10	57600000	57700000	Meat_and_Carcass	Carcass_fat_percentage	
Charollais	Tajimas'D	10	57600000	57700000	Meat_and_Carcass	Carcass_bone_percentage	
Charollais	Tajimas'D	10	57600000	57700000	Meat_and_Carcass	fat_weight_in_carcass	
Charollais	Tajimas'D	10	57600000	57700000	Meat_and_Carcass	Lean_meat_yield_percentage	
Charollais	Tajimas'D	11	13900000	1.4e+07	Meat_and_Carcass	internal_fat_amount	
Charollais	Tajimas'D	11	13900000	1.4e+07	Meat_and_Carcass	Hot_carcass_weight	
Charollais	Tajimas'D	11	29200000	29300000	Meat_and_Carcass	Jaw_length	
Charollais	Tajimas'D	11	29200000	29300000	Meat_and_Carcass	Jaw_length	
Charollais	Tajimas'D	13	7700000	7800000	Meat_and_Carcass	muscle_weight_in_carcass	

Charollais	Tajimas'D	16	33000000	33100000	Meat_and_Carcass	Lean_meat_yield_percentage
Charollais	Tajimas'D	16	33000000	33100000	Meat_and_Carcass	Dressing_percentage
Charollais	Tajimas'D	16	33000000	33100000	Meat_and_Carcass	Subcutaneous_fat_thickness
Charollais	Tajimas'D	16	33000000	33100000	Meat_and_Carcass	Subcutaneous_fat_area
Charollais	Tajimas'D	16	33000000	33100000	Meat_and_Carcass	Subcutaneous_fat_area
Charollais	Tajimas'D	16	61200000	61300000	Meat_and_Carcass	Lean_meat_yield_percentage
Charollais	Tajimas'D	19	1800000	1900000	Meat_and_Carcass	Dressing_percentage
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_oleic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_linolenic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_gadoleic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_stearic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_cis-vaccenic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_linoleic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_arachidonic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_palmitic_acid_content
Charollais	Tajimas'D	21	6500000	6600000	Meat_and_Carcass	Meat_myristic_acid_content
Charollais	Tajimas'D	23	16900000	1.7e+07	Meat_and_Carcass	Lean_meat_yield_percentage
Charollais	Tajimas'D	23	16900000	1.7e+07	Meat_and_Carcass	muscle_weight_in_carcass
Charollais	Tajimas'D	23	16900000	1.7e+07	Meat_and_Carcass	Carcass_fat_percentage
Charollais	Tajimas'D	23	16900000	1.7e+07	Meat_and_Carcass	fat_weight_in_carcass
Charollais	Tajimas'D	23	16900000	1.7e+07	Meat_and_Carcass	Hot_carcass_weight
Charollais	Tajimas'D	23	16900000	1.7e+07	Meat_and_Carcass	Lean_meat_yield_percentage
Charollais	Tajimas'D	23	16900000	1.7e+07	Meat_and_Carcass	fat_weight_in_carcass
Charollais	Tajimas'D	24	18800000	18900000	Meat_and_Carcass	Bone_weight_in_carcass
Charollais	Tajimas'D	26	11500000	11600000	Meat_and_Carcass	muscle_weight_in_carcass
Charollais	Tajimas'D	8	22500000	22600000	Milk	Milk_fat_percentage
Charollais	Tajimas'D	8	83600000	83700000	Milk	milk_lactose_yield
Charollais	Tajimas'D	2	29700000	29800000	Milk	Milk_fat_percentage
Charollais	Tajimas'D	2	122300000	122400000	Milk	milk_lactose_yield
Charollais	Tajimas'D	2	152900000	1.53e+08	Milk	Milk_Yield

Charollais	Tajimas'D	3	70000000	70100000	Milk	Milk_fat_percentage	
Charollais	Tajimas'D	3	70000000	70100000	Milk	Milk_Yield	
Charollais	Tajimas'D	3	70000000	70100000	Milk	milk_lactose_yield	
Charollais	Tajimas'D	3	70000000	70100000	Milk	Milk_protein_yield	
Charollais	Tajimas'D	3	70000000	70100000	Milk	Milk_fat_yield	
Charollais	Tajimas'D	3	146000000	146100000	Milk	Milk_protein_percentage	
Charollais	Tajimas'D	9	7900000	8.00E+06	Milk	Useful_yield_content	
Charollais	Tajimas'D	9	79900000	8.00E+07	Milk	Milk_fat_yield	
Charollais	Tajimas'D	11	13900000	1.4e+07	Milk	Milk_Yield	
Charollais	Tajimas'D	11	13900000	1.4e+07	Milk	Milk_protein_yield	
Charollais	Tajimas'D	11	13900000	1.4e+07	Milk	milk_polyunsaturated_fatty_acid_content	
Charollais	Tajimas'D	11	13900000	1.4e+07	Milk	Milk_yield_persistence	
Charollais	Tajimas'D	13	69600000	69700000	Milk	Milk_fat_yield_{180d}	rs400934733
Charollais	Tajimas'D	19	39100000	39200000	Milk	Milk_fat_yield_{180d}	rs410133961
Charollais	Tajimas'D	21	6500000	6600000	Milk	milk_lactose_yield	
Charollais	Tajimas'D	25	14100000	14200000	Milk	Milk_fat_percentage	
Charollais	Tajimas'D	25	14100000	14200000	Milk	Useful_yield_content	
Charollais	Tajimas'D	1	142200000	142400000	Production	Body_weight	
Charollais	Tajimas'D	8	83600000	83700000	Production	Body_weight	
Charollais	Tajimas'D	8	90800000	90900000	Production	Body_weight	
Charollais	Tajimas'D	2	67700000	67800000	Production	Body_weight	
Charollais	Tajimas'D	2	191000000	191100000	Production	Body_weight	
Charollais	Tajimas'D	2	214700000	214800000	Production	bone_density	
Charollais	Tajimas'D	2	214700000	214800000	Production	Body_weight	
Charollais	Tajimas'D	3	132800000	132900000	Production	Body_weight	
Charollais	Tajimas'D	3	132800000	132900000	Production	Body_weight_change	
Charollais	Tajimas'D	3	146000000	146100000	Production	Body_weight	
Charollais	Tajimas'D	3	158900000	1.59e+08	Production	Body_weight	rs407025577
Charollais	Tajimas'D	4	26400000	26500000	Production	Body_weight	
Charollais	Tajimas'D	5	46200000	46300000	Production	Body_weight	
Charollais	Tajimas'D	6	44300000	44400000	Production	Body_weight	

Charollais	Tajimas'D	6	44300000	44400000	Production	Body_weight	
Charollais	Tajimas'D	11	13900000	1.4e+07	Production	Body_weight	
Charollais	Tajimas'D	16	33000000	33100000	Production	Body_weight	
Charollais	Tajimas'D	17	67200000	67300000	Production	bone_density	
Charollais	Tajimas'D	21	26600000	26700000	Production	Body_weight	
Charollais	Tajimas'D	21	26600000	26700000	Production	Average_daily_gain	
Charollais	Tajimas'D	23	16900000	1.7e+07	Production	Average_daily_gain	
Charollais	Tajimas'D	23	16900000	1.7e+07	Production	Body_weight	
Charollais	Tajimas'D	24	18800000	18900000	Production	bone_density	
Charollais	Tajimas'D	1	166400000	166500000	Reproduction	Reproductive_seasonality	
Charollais	Tajimas'D	1	194600000	194700000	Reproduction	Reproductive_seasonality	
Charollais	Tajimas'D	3	178600000	178700000	Reproduction	Reproductive_seasonality	
Charollais	Tajimas'D	10	57600000	57700000	Reproduction	Testes_weight	
Charollais	Tajimas'D	18	9900000	1.00E+07	Reproduction	Testes_weight	
Charollais	Tajimas'D	19	1800000	1900000	Reproduction	Reproductive_seasonality	
Charollais	Tajimas'D	24	18800000	18900000	Reproduction	Testes_weight	
Charollais	Tajimas'D	24	18800000	18900000	Reproduction	Testes_weight	
Charollais	Tajimas'D	25	14100000	14200000	Reproduction	Testes_weight	
Charollais	Tajimas'D	1	151500000	151600000	Wool	Fleece_yield	
Charollais	Tajimas'D	1	221500000	221600000	Wool	Fleece_yield	
Charollais	Tajimas'D	1	261300000	261400000	Wool	Mean_fiber_diameter	rs401124967
Charollais	Tajimas'D	1	269300000	269400000	Wool	Greasy_fleece_weight	rs414744468
Charollais	Tajimas'D	3	19700000	19800000	Wool	Staple_length	
Charollais	Tajimas'D	4	26400000	26500000	Wool	mary_fiber_diameter_coefficient_of_variance	
Charollais	Tajimas'D	5	46200000	46300000	Wool	Mean_fiber_diameter	
Charollais	Tajimas'D	6	44300000	44400000	Wool	Mean_fiber_diameter	
Charollais	Tajimas'D	7	20800000	20900000	Wool	mary_fiber_diameter_coefficient_of_variance	
Charollais	Tajimas'D	7	20800000	20900000	Wool	Staple_length	
Charollais	Tajimas'D	15	45800000	45900000	Wool	Staple_length	
Charollais	Tajimas'D	25	14100000	14200000	Wool	Mean_fiber_diameter	
Charollais	Tajimas'D	25	14100000	14200000	Wool	mary_fiber_diameter_coefficient_of_variance	

Charollais	Tajimas'D	25	14100000	14200000	Wool	Greasy_fleece_weight	
Charollais	Tajimas'D	25	14100000	14200000	Wool	Staple_length	
Suffolk	Tajimas'D	2	39100000	39200000	Exterior	Rump_width	
Suffolk	Tajimas'D	2	78300000	78400000	Exterior	Brown	
Suffolk	Tajimas'D	13	67400000	67500000	Exterior	Agouti	
Suffolk	Tajimas'D	1	37900000	3.8e+07	Exterior	Coat_color	rs398605137
Suffolk	Tajimas'D	5	56300000	56400000	Exterior	Foot_angle	
Suffolk	Tajimas'D	7	1800000	1900000	Exterior	Teat_placement	
Suffolk	Tajimas'D	10	9800000	9900000	Exterior	Horns	
Suffolk	Tajimas'D	10	26900000	2.7e+07	Exterior	Horn_type	rs416770048
Suffolk	Tajimas'D	10	26900000	2.7e+07	Exterior	Horn_circumference	rs416770048
Suffolk	Tajimas'D	10	26900000	2.7e+07	Exterior	Horn_type	rs408429296
Suffolk	Tajimas'D	15	9300000	9400000	Exterior	udder_shape	
Suffolk	Tajimas'D	17	35400000	35500000	Exterior	Horn_type	rs429549755
Suffolk	Tajimas'D	26	27500000	27600000	Exterior	Stature	
Suffolk	Tajimas'D	26	27500000	27600000	Exterior	udder_attachment	
Suffolk	Tajimas'D	2	62400000	62500000	Health	Trichostrongylus_adult_and_larva_count	
Suffolk	Tajimas'D	2	95900000	9.6e+07	Health	Somatic_cell_score	
Suffolk	Tajimas'D	2	113700000	113800000	Health	Nematodirus_FEC	
Suffolk	Tajimas'D	2	169100000	169200000	Health	Hematocrit	rs407448568
Suffolk	Tajimas'D	2	211600000	211800000	Health	Worm_count	
Suffolk	Tajimas'D	2	211600000	211800000	Health	Change_in_hematocrit	
Suffolk	Tajimas'D	2	211600000	211800000	Health	Haemonchus_contortus_FEC	
Suffolk	Tajimas'D	4	21800000	21900000	Health	Haemonchus_contortus_FEC	
Suffolk	Tajimas'D	13	21700000	21800000	Health	Salmonella_abortusovis_susceptibility	
Suffolk	Tajimas'D	13	67400000	67500000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	1	117300000	117400000	Health	facial_eczema_susceptibility	
Suffolk	Tajimas'D	1	117300000	117400000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	1	174500000	174600000	Health	Salmonella_abortusovis_susceptibility	
Suffolk	Tajimas'D	1	212500000	212600000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	1	212500000	212600000	Health	Trichostrongylus_colubriformis_FEC	

Suffolk	Tajimas'D	3	23500000	23600000	Health	Haemonchus_contortus_FEC	
Suffolk	Tajimas'D	3	23500000	23600000	Health	Trichostrongylus_colubriformis_FEC	
Suffolk	Tajimas'D	3	118800000	118900000	Health	Trichostrongylus_colubriformis_FEC	
Suffolk	Tajimas'D	3	134800000	134900000	Health	Change_in_eosinophil_number	
Suffolk	Tajimas'D	3	165000000	165100000	Health	Strongyle_FEC	
Suffolk	Tajimas'D	3	186100000	186200000	Health	Hematocrit	
Suffolk	Tajimas'D	3	186100000	186200000	Health	Nematodirus_FEC	
Suffolk	Tajimas'D	3	197700000	197800000	Health	Fecal_oocyst_count	
Suffolk	Tajimas'D	3	197700000	197800000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	3	197700000	197800000	Health	Pneumonia_susceptibility	rs405096150
Suffolk	Tajimas'D	3	197700000	197800000	Health	Pneumonia_susceptibility	rs430716198
Suffolk	Tajimas'D	3	197700000	197800000	Health	Pneumonia_susceptibility	rs412869687
Suffolk	Tajimas'D	5	25000000	25100000	Health	Inherited_Ovine_Arthrogryposis	
Suffolk	Tajimas'D	6	28400000	28500000	Health	facial_eczema_susceptibility	
Suffolk	Tajimas'D	6	37300000	37400000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	6	104100000	104200000	Health	Trichostrongylus_colubriformis_FEC	
Suffolk	Tajimas'D	7	32600000	32700000	Health	Fecal_egg_count	rs407390907
Suffolk	Tajimas'D	7	44000000	44100000	Health	Haemonchus_contortus_FEC	
Suffolk	Tajimas'D	8	3900000	4.00E+06	Health	Trichostrongylus_adult_and_larva_count	
Suffolk	Tajimas'D	8	64700000	64800000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	9	25100000	25200000	Health	Salmonella_abortusovis_susceptibility	
Suffolk	Tajimas'D	10	26900000	2.7e+07	Health	Fecal_egg_count	
Suffolk	Tajimas'D	10	26900000	2.7e+07	Health	Somatic_cell_score	
Suffolk	Tajimas'D	10	56000000	56100000	Health	Strongyle_FEC	rs403481418
Suffolk	Tajimas'D	11	8000000	8100000	Health	Trichostrongylus_adult_and_larva_count	
Suffolk	Tajimas'D	12	69300000	69400000	Health	Trichostrongylus_colubriformis_FEC	
Suffolk	Tajimas'D	14	16700000	16800000	Health	Nematodirus_FEC	
Suffolk	Tajimas'D	15	42300000	42400000	Health	facial_eczema_susceptibility	
Suffolk	Tajimas'D	15	76800000	76900000	Health	Entropion	rs406483937
Suffolk	Tajimas'D	15	77000000	77100000	Health	Entropion	rs406890665
Suffolk	Tajimas'D	15	77800000	77900000	Health	Entropion	rs408379054

Suffolk	Tajimas'D	15	78500000	78600000	Health	Entropion	rs406948829
Suffolk	Tajimas'D	15	78500000	78600000	Health	Entropion	rs413785588
Suffolk	Tajimas'D	16	1200000	1300000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	17	8300000	8400000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	18	43500000	43600000	Health	Haemonchus_contortus_FEC	
Suffolk	Tajimas'D	19	26700000	26800000	Health	somatic_cell_count	rs423853786
Suffolk	Tajimas'D	19	27000000	27100000	Health	Clinical_mastitis	rs402424407
Suffolk	Tajimas'D	20	9400000	9500000	Health	Strongyle_FEC	
Suffolk	Tajimas'D	20	24400000	24500000	Health	Salmonella_abortusovis_susceptibility	
Suffolk	Tajimas'D	20	24400000	24500000	Health	Immunoglobulin_A_level	
Suffolk	Tajimas'D	20	24400000	24500000	Health	Salmonella_abortusovis_susceptibility	
Suffolk	Tajimas'D	21	20300000	20400000	Health	Salmonella_abortusovis_susceptibility	
Suffolk	Tajimas'D	22	12800000	12900000	Health	Somatic_cell_score	
Suffolk	Tajimas'D	22	22800000	22900000	Health	Trichostrongylus_colubriformis_FEC	
Suffolk	Tajimas'D	22	22800000	22900000	Health	Fecal_egg_count	
Suffolk	Tajimas'D	22	22800000	22900000	Health	Hematocrit	
Suffolk	Tajimas'D	22	42900000	4.3e+07	Health	scrapie_susceptibility	
Suffolk	Tajimas'D	23	27200000	27300000	Health	Immunoglobulin_G_level	
Suffolk	Tajimas'D	26	14900000	1.5e+07	Health	Change_in_hematocrit	
Suffolk	Tajimas'D	26	14900000	1.5e+07	Health	Worm_count	
Suffolk	Tajimas'D	26	14900000	1.5e+07	Health	Eggs_per_worm	
Suffolk	Tajimas'D	26	14900000	1.5e+07	Health	Haemonchus_contortus_FEC	
Suffolk	Tajimas'D	26	27500000	27600000	Health	Worm_count	
Suffolk	Tajimas'D	2	28200000	28300000	Meat_and_Carcass	Meat_arachidonic_acid_content	
Suffolk	Tajimas'D	2	28200000	28300000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content	
Suffolk	Tajimas'D	2	28200000	28300000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Suffolk	Tajimas'D	2	28200000	28300000	Meat_and_Carcass	Meat_linolenic_acid_content	
Suffolk	Tajimas'D	2	56800000	56900000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	Tajimas'D	2	78300000	78400000	Meat_and_Carcass	Ultimate_pH	
Suffolk	Tajimas'D	2	78300000	78400000	Meat_and_Carcass	Meat_color_a*	
Suffolk	Tajimas'D	2	95900000	9.6e+07	Meat_and_Carcass	Meat_color_L*	

Suffolk	Tajimas'D	2	95900000	9.6e+07	Meat_and_Carcass	Meat_color_b*
Suffolk	Tajimas'D	2	95900000	9.6e+07	Meat_and_Carcass	Meat_color_a*
Suffolk	Tajimas'D	2	113700000	113800000	Meat_and_Carcass	Shear_force
Suffolk	Tajimas'D	2	113700000	113800000	Meat_and_Carcass	Meat_color_L*
Suffolk	Tajimas'D	2	113700000	113800000	Meat_and_Carcass	Foreleg_length
Suffolk	Tajimas'D	2	199100000	199200000	Meat_and_Carcass	Hot_carcass_weight
Suffolk	Tajimas'D	13	21700000	21800000	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	Tajimas'D	1	6900000	7.00E+06	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	Tajimas'D	1	6900000	7.00E+06	Meat_and_Carcass	Lean_meat_yield_percentage
Suffolk	Tajimas'D	1	15300000	15400000	Meat_and_Carcass	Carcass_fat_percentage
Suffolk	Tajimas'D	1	37900000	3.8e+07	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	Tajimas'D	1	37900000	3.8e+07	Meat_and_Carcass	Bone_weight_in_carcass
Suffolk	Tajimas'D	1	56200000	56300000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Suffolk	Tajimas'D	1	56200000	56300000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Suffolk	Tajimas'D	1	56200000	56300000	Meat_and_Carcass	Carcass_bone_percentage
Suffolk	Tajimas'D	1	56200000	56300000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Suffolk	Tajimas'D	1	85400000	85500000	Meat_and_Carcass	Backfat_at_third_lumbar
Suffolk	Tajimas'D	1	85400000	85500000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Suffolk	Tajimas'D	1	134500000	134600000	Meat_and_Carcass	Bone_weight_in_carcass
Suffolk	Tajimas'D	1	134500000	134600000	Meat_and_Carcass	Carcass_bone_percentage
Suffolk	Tajimas'D	1	164100000	164200000	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	Tajimas'D	1	164100000	164200000	Meat_and_Carcass	Carcass_fat_percentage
Suffolk	Tajimas'D	1	174500000	174600000	Meat_and_Carcass	muscle_weight_in_carcass
Suffolk	Tajimas'D	1	174500000	174600000	Meat_and_Carcass	Lean_meat_yield_percentage
Suffolk	Tajimas'D	1	182000000	182100000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Suffolk	Tajimas'D	1	195600000	195700000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Suffolk	Tajimas'D	3	91900000	9.2e+07	Meat_and_Carcass	internal_fat_amount
Suffolk	Tajimas'D	3	91900000	9.2e+07	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Suffolk	Tajimas'D	3	118800000	118900000	Meat_and_Carcass	internal_fat_amount
Suffolk	Tajimas'D	3	186100000	186200000	Meat_and_Carcass	Subcutaneous_fat_thickness
Suffolk	Tajimas'D	5	25000000	25100000	Meat_and_Carcass	Meat_palmitoleic_acid_content

Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	fat_weight_in_carcass	
Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	muscle_weight_in_carcass	
Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	Carcass_fat_percentage	
Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	internal_fat_amount	
Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	fat_weight_in_carcass	
Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	Tajimas'D	6	12400000	12500000	Meat_and_Carcass	Carcass_fat_percentage	
Suffolk	Tajimas'D	6	28400000	28500000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	Tajimas'D	6	37300000	37400000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	Tajimas'D	6	37300000	37400000	Meat_and_Carcass	Bone_area	rs159958223
Suffolk	Tajimas'D	7	1800000	1900000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	Tajimas'D	7	26700000	26800000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	Tajimas'D	8	3900000	4.00E+06	Meat_and_Carcass	internal_fat_amount	
Suffolk	Tajimas'D	9	25100000	25200000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	Tajimas'D	9	25100000	25200000	Meat_and_Carcass	muscle_weight_in_carcass	
Suffolk	Tajimas'D	9	25100000	25200000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	Tajimas'D	9	30600000	30700000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	Tajimas'D	9	49800000	49900000	Meat_and_Carcass	Longissimus_muscle_area	
Suffolk	Tajimas'D	9	49800000	49900000	Meat_and_Carcass	muscle_weight_in_carcass	
Suffolk	Tajimas'D	10	9800000	9900000	Meat_and_Carcass	Carcass_fat_percentage	
Suffolk	Tajimas'D	10	9800000	9900000	Meat_and_Carcass	Carcass_bone_percentage	
Suffolk	Tajimas'D	10	9800000	9900000	Meat_and_Carcass	fat_weight_in_carcass	
Suffolk	Tajimas'D	10	9800000	9900000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	Tajimas'D	11	8000000	8100000	Meat_and_Carcass	internal_fat_amount	
Suffolk	Tajimas'D	11	8000000	8100000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	Tajimas'D	11	34400000	34500000	Meat_and_Carcass	Jaw_length	
Suffolk	Tajimas'D	11	34400000	34500000	Meat_and_Carcass	Jaw_length	
Suffolk	Tajimas'D	11	34400000	34500000	Meat_and_Carcass	Jaw_length	
Suffolk	Tajimas'D	12	2800000	2900000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	Tajimas'D	12	2800000	2900000	Meat_and_Carcass	Carcass_fat_percentage	

Suffolk	Tajimas'D	14	16700000	16800000	Meat_and_Carcass	Bone_weight_in_carcass
Suffolk	Tajimas'D	14	16700000	16800000	Meat_and_Carcass	Dressing_percentage
Suffolk	Tajimas'D	14	16700000	16800000	Meat_and_Carcass	fat_weight_in_carcass
Suffolk	Tajimas'D	14	16700000	16800000	Meat_and_Carcass	Dressing_percentage
Suffolk	Tajimas'D	15	72000000	72100000	Meat_and_Carcass	Hind_leg_length
Suffolk	Tajimas'D	16	1200000	1300000	Meat_and_Carcass	Lean_meat_yield_percentage
Suffolk	Tajimas'D	16	11200000	11300000	Meat_and_Carcass	Dressing_percentage
Suffolk	Tajimas'D	16	11200000	11300000	Meat_and_Carcass	Subcutaneous_fat_thickness
Suffolk	Tajimas'D	16	11200000	11300000	Meat_and_Carcass	Subcutaneous_fat_area
Suffolk	Tajimas'D	16	36400000	36500000	Meat_and_Carcass	Subcutaneous_fat_area
Suffolk	Tajimas'D	16	67200000	67300000	Meat_and_Carcass	Lean_meat_yield_percentage
Suffolk	Tajimas'D	18	39100000	39200000	Meat_and_Carcass	Meat_gadoleic_acid_content
Suffolk	Tajimas'D	18	39100000	39200000	Meat_and_Carcass	Meat_docosaehaenoic_acid_content
Suffolk	Tajimas'D	18	39100000	39200000	Meat_and_Carcass	Carcass_fat_percentage
Suffolk	Tajimas'D	18	54600000	54700000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Suffolk	Tajimas'D	18	58600000	58700000	Meat_and_Carcass	Longissimus_muscle_area
Suffolk	Tajimas'D	18	58600000	58700000	Meat_and_Carcass	Longissimus_muscle_depth
Suffolk	Tajimas'D	18	58600000	58700000	Meat_and_Carcass	Loin_weight
Suffolk	Tajimas'D	18	58600000	58700000	Meat_and_Carcass	Longissimus_muscle_width
Suffolk	Tajimas'D	19	8500000	8600000	Meat_and_Carcass	Dressing_percentage
Suffolk	Tajimas'D	20	24400000	24500000	Meat_and_Carcass	Metacarpal_length
Suffolk	Tajimas'D	20	38500000	38600000	Meat_and_Carcass	Foreleg_length
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_oleic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_linolenic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_gadoleic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_stearic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_cis-vaccenic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_linoleic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_arachidonic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_palmitic_acid_content

Suffolk	Tajimas'D	21	20300000	20400000	Meat_and_Carcass	Meat_myristic_acid_content	
Suffolk	Tajimas'D	23	27200000	27300000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	Tajimas'D	23	27200000	27300000	Meat_and_Carcass	muscle_weight_in_carcass	
Suffolk	Tajimas'D	23	27200000	27300000	Meat_and_Carcass	Carcass_fat_percentage	
Suffolk	Tajimas'D	23	27200000	27300000	Meat_and_Carcass	fat_weight_in_carcass	
Suffolk	Tajimas'D	23	27200000	27300000	Meat_and_Carcass	Hot_carcass_weight	
Suffolk	Tajimas'D	23	27200000	27300000	Meat_and_Carcass	Lean_meat_yield_percentage	
Suffolk	Tajimas'D	23	27200000	27300000	Meat_and_Carcass	fat_weight_in_carcass	
Suffolk	Tajimas'D	24	7500000	7600000	Meat_and_Carcass	Bone_weight_in_carcass	
Suffolk	Tajimas'D	26	14900000	1.5e+07	Meat_and_Carcass	muscle_weight_in_carcass	
Suffolk	Tajimas'D	2	28200000	28300000	Milk	Milk_fat_percentage	
Suffolk	Tajimas'D	2	121500000	121600000	Milk	milk_lactose_yield	
Suffolk	Tajimas'D	2	142500000	142600000	Milk	Milk_Yield	
Suffolk	Tajimas'D	2	219600000	219700000	Milk	Milk_fat_yield_{180d}	rs425306547
Suffolk	Tajimas'D	1	37900000	3.8e+07	Milk	Milk_fat_yield_{180d}	rs398605137
Suffolk	Tajimas'D	1	85400000	85500000	Milk	Milk_Yield	
Suffolk	Tajimas'D	1	103700000	103800000	Milk	Milk_fat_percentage	
Suffolk	Tajimas'D	1	103700000	103800000	Milk	Milk_Yield	
Suffolk	Tajimas'D	1	103700000	103800000	Milk	Milk_protein_percentage	
Suffolk	Tajimas'D	3	134800000	134900000	Milk	Milk_protein_percentage	
Suffolk	Tajimas'D	5	59900000	6.00E+07	Milk	Cheese_yield	rs405557393
Suffolk	Tajimas'D	6	64500000	64600000	Milk	Curd_firmness	rs403326504
Suffolk	Tajimas'D	6	87200000	87300000	Milk	Useful_yield_content	
Suffolk	Tajimas'D	7	32600000	32700000	Milk	Milk_protein_percentage	
Suffolk	Tajimas'D	8	33700000	33800000	Milk	Milk_fat_percentage	
Suffolk	Tajimas'D	9	25100000	25200000	Milk	Useful_yield_content	
Suffolk	Tajimas'D	9	77400000	77500000	Milk	Milk_fat_yield	
Suffolk	Tajimas'D	11	8000000	8100000	Milk	milk_conjugated_linoleic_acid_content	
Suffolk	Tajimas'D	11	34400000	34500000	Milk	Milk_Yield	
Suffolk	Tajimas'D	11	34400000	34500000	Milk	Milk_protein_yield	
Suffolk	Tajimas'D	11	34400000	34500000	Milk	milk_polyunsaturated_fatty_acid_content	

Suffolk	Tajimas'D	11	34400000	34500000	Milk	Milk_yield_persistency	
Suffolk	Tajimas'D	11	34400000	34500000	Milk	milk_capric_acid_content	
Suffolk	Tajimas'D	11	34400000	34500000	Milk	milk_lauric_acid_content	
Suffolk	Tajimas'D	20	9400000	9500000	Milk	Milk_Yield	
Suffolk	Tajimas'D	20	24400000	24500000	Milk	Milk_Yield	
Suffolk	Tajimas'D	20	24400000	24500000	Milk	Milk_protein_yield	
Suffolk	Tajimas'D	20	24400000	24500000	Milk	milk_lactose_yield	
Suffolk	Tajimas'D	20	24400000	24500000	Milk	Milk_fat_yield	
Suffolk	Tajimas'D	20	38500000	38600000	Milk	Milk_fat_percentage	
Suffolk	Tajimas'D	24	7500000	7600000	Milk	Milk_Yield	
Suffolk	Tajimas'D	24	7500000	7600000	Milk	Milk_protein_persistency	
Suffolk	Tajimas'D	25	10400000	10500000	Milk	Milk_fat_percentage	
Suffolk	Tajimas'D	25	10400000	10500000	Milk	Useful_yield_content	
Suffolk	Tajimas'D	2	39100000	39200000	Production	Body_weight	
Suffolk	Tajimas'D	2	78300000	78400000	Production	Body_weight	
Suffolk	Tajimas'D	2	199100000	199200000	Production	Body_weight	
Suffolk	Tajimas'D	2	211600000	211800000	Production	bone_density	
Suffolk	Tajimas'D	2	211600000	211800000	Production	Body_weight	
Suffolk	Tajimas'D	4	21800000	21900000	Production	Body_weight	
Suffolk	Tajimas'D	4	29000000	29100000	Production	Body_weight	
Suffolk	Tajimas'D	1	15300000	15400000	Production	Body_weight	rs429410575
Suffolk	Tajimas'D	1	92500000	92600000	Production	Body_weight	
Suffolk	Tajimas'D	1	117300000	117400000	Production	bone_density	
Suffolk	Tajimas'D	1	133700000	133800000	Production	bone_density	
Suffolk	Tajimas'D	3	134800000	134900000	Production	Body_weight	
Suffolk	Tajimas'D	3	134800000	134900000	Production	Body_weight	
Suffolk	Tajimas'D	5	25000000	25100000	Production	Body_weight	
Suffolk	Tajimas'D	5	99200000	99300000	Production	Body_weight	
Suffolk	Tajimas'D	6	12400000	12500000	Production	Body_weight	
Suffolk	Tajimas'D	6	12400000	12500000	Production	Body_weight	
Suffolk	Tajimas'D	6	37300000	37400000	Production	Body_weight	

Suffolk	Tajimas'D	6	37300000	37400000	Production	Body_weight	rs159958223
Suffolk	Tajimas'D	6	37300000	37400000	Production	Total_bone	rs159958223
Suffolk	Tajimas'D	8	90800000	90900000	Production	Body_weight	
Suffolk	Tajimas'D	11	8000000	8100000	Production	Body_weight	
Suffolk	Tajimas'D	14	16700000	16800000	Production	Total_bone	
Suffolk	Tajimas'D	14	16700000	16800000	Production	Total_bone	
Suffolk	Tajimas'D	14	16700000	16800000	Production	bone_density	
Suffolk	Tajimas'D	16	1200000	1300000	Production	Body_weight	
Suffolk	Tajimas'D	16	11200000	11300000	Production	Body_weight	
Suffolk	Tajimas'D	18	43500000	43600000	Production	Average_daily_gain	
Suffolk	Tajimas'D	21	20300000	20400000	Production	Body_weight	
Suffolk	Tajimas'D	21	20300000	20400000	Production	Average_daily_gain	
Suffolk	Tajimas'D	23	27200000	27300000	Production	Body_weight	
Suffolk	Tajimas'D	23	27200000	27300000	Production	Body_weight	
Suffolk	Tajimas'D	26	14900000	1.5e+07	Production	Average_daily_gain	
Suffolk	Tajimas'D	1	164100000	164200000	Reproduction	Reproductive_seasonality	
Suffolk	Tajimas'D	1	190000000	190100000	Reproduction	Total_lambs_born	rs424602351
Suffolk	Tajimas'D	1	195600000	195700000	Reproduction	Reproductive_seasonality	
Suffolk	Tajimas'D	3	186100000	186200000	Reproduction	Reproductive_seasonality	
Suffolk	Tajimas'D	10	26900000	2.7e+07	Reproduction	Testes_weight	
Suffolk	Tajimas'D	17	17600000	17700000	Reproduction	Reproductive_seasonality	
Suffolk	Tajimas'D	18	39100000	39200000	Reproduction	Testes_weight	
Suffolk	Tajimas'D	19	8500000	8600000	Reproduction	Reproductive_seasonality	
Suffolk	Tajimas'D	20	9400000	9500000	Reproduction	Testes_weight	
Suffolk	Tajimas'D	20	9400000	9500000	Reproduction	Testes_weight	
Suffolk	Tajimas'D	24	7500000	7600000	Reproduction	Testes_weight	
Suffolk	Tajimas'D	24	7500000	7600000	Reproduction	Testes_weight	
Suffolk	Tajimas'D	25	10400000	10500000	Reproduction	Testes_weight	
Suffolk	Tajimas'D	4	21800000	21900000	Wool	mary_fiber_diameter_coefficient_of_variance	
Suffolk	Tajimas'D	1	152400000	152500000	Wool	Fleece_yield	
Suffolk	Tajimas'D	1	212500000	212600000	Wool	Fleece_yield	

Suffolk	Tajimas'D	1	236600000	236700000	Wool	Fiber_curvature	
Suffolk	Tajimas'D	3	23500000	23600000	Wool	Staple_length	
Suffolk	Tajimas'D	6	12400000	12500000	Wool	Mean_fiber_diameter	
Suffolk	Tajimas'D	7	1800000	1900000	Wool	mary_fiber_diameter_coefficient_of_variance	
Suffolk	Tajimas'D	7	1800000	1900000	Wool	Staple_length	
Suffolk	Tajimas'D	10	26900000	2.7e+07	Wool	Wool_crimp	rs427905891
Suffolk	Tajimas'D	15	42300000	42400000	Wool	Staple_length	
Suffolk	Tajimas'D	18	39100000	39200000	Wool	Staple_length	
Suffolk	Tajimas'D	25	10400000	10500000	Wool	Mean_fiber_diameter	
Suffolk	Tajimas'D	25	10400000	10500000	Wool	mary_fiber_diameter_coefficient_of_variance	
Suffolk	Tajimas'D	25	10400000	10500000	Wool	Greasy_fleece_weight	
Suffolk	Tajimas'D	25	10400000	10500000	Wool	Staple_length	
Suffolk	Tajimas'D	25	10400000	10500000	Wool	Staple_length	
Texel	Tajimas'D	2	78000000	78100000	Exterior	Brown	
Texel	Tajimas'D	7	12600000	12700000	Exterior	Teat_placement	
Texel	Tajimas'D	10	6400000	6500000	Exterior	Horns	
Texel	Tajimas'D	10	27000000	27100000	Exterior	Horn_type	rs417637773
Texel	Tajimas'D	2	68400000	68500000	Health	Trichostrongylus_adult_and_larva_count	
Texel	Tajimas'D	2	93300000	93400000	Health	Somatic_cell_score	
Texel	Tajimas'D	2	114100000	114200000	Health	Nematodirus_FEC	
Texel	Tajimas'D	2	127200000	127500000	Health	Entropion	rs399484108
Texel	Tajimas'D	1	177800000	177900000	Health	Salmonella_abortusovis_susceptibility	
Texel	Tajimas'D	1	198600000	198700000	Health	Pneumonia_susceptibility	rs421794454
Texel	Tajimas'D	1	198600000	198700000	Health	Pneumonia_susceptibility	rs416081302
Texel	Tajimas'D	1	219200000	219300000	Health	Trichostrongylus_colubriformis_FEC	
Texel	Tajimas'D	3	23300000	23400000	Health	Haemonchus_contortus_FEC	
Texel	Tajimas'D	3	23300000	23400000	Health	Trichostrongylus_colubriformis_FEC	
Texel	Tajimas'D	3	134800000	134900000	Health	Change_in_eosinophil_number	
Texel	Tajimas'D	3	156400000	156500000	Health	Strongyle_FEC	
Texel	Tajimas'D	3	211300000	211400000	Health	Entropion	rs418752307
Texel	Tajimas'D	4	26000000	26100000	Health	Haemonchus_contortus_FEC	

Texel	Tajimas'D	6	22300000	22400000	Health	facial_eczema_susceptibility	
Texel	Tajimas'D	8	61500000	61600000	Health	Trichostrongylus_adult_and_larva_count	
Texel	Tajimas'D	8	67600000	67700000	Health	Fecal_egg_count	
Texel	Tajimas'D	9	31800000	31900000	Health	Salmonella_abortusovis_susceptibility	
Texel	Tajimas'D	10	17000000	17100000	Health	Strongyle_FEC	rs408309086
Texel	Tajimas'D	10	27000000	27100000	Health	Fecal_egg_count	
Texel	Tajimas'D	10	27000000	27100000	Health	Somatic_cell_score	
Texel	Tajimas'D	13	39200000	39300000	Health	Salmonella_abortusovis_susceptibility	
Texel	Tajimas'D	13	39200000	39300000	Health	facial_eczema_susceptibility	
Texel	Tajimas'D	13	73400000	73500000	Health	Fecal_egg_count	
Texel	Tajimas'D	14	27300000	27400000	Health	Nematodirus_FEC	
Texel	Tajimas'D	14	27300000	27400000	Health	Fecal_egg_count	
Texel	Tajimas'D	14	27300000	27400000	Health	Nematodirus_FEC	
Texel	Tajimas'D	14	48300000	48400000	Health	Nematodirus_FEC	
Texel	Tajimas'D	14	48300000	48400000	Health	Somatic_cell_score	
Texel	Tajimas'D	14	48300000	48400000	Health	Nematodirus_FEC	rs160953433
Texel	Tajimas'D	17	24400000	24500000	Health	Fecal_egg_count	
Texel	Tajimas'D	17	60900000	6.1e+07	Health	Somatic_cell_score	
Texel	Tajimas'D	18	11700000	11800000	Health	Hematocrit	
Texel	Tajimas'D	18	41800000	41900000	Health	Haemonchus_contortus_FEC	
Texel	Tajimas'D	20	24600000	24700000	Health	Salmonella_abortusovis_susceptibility	
Texel	Tajimas'D	20	24600000	24700000	Health	Immunoglobulin_A_level	
Texel	Tajimas'D	20	24600000	24700000	Health	Salmonella_abortusovis_susceptibility	
Texel	Tajimas'D	21	33600000	33700000	Health	Salmonella_abortusovis_susceptibility	
Texel	Tajimas'D	21	33600000	33700000	Health	Salmonella_abortusovis_susceptibility	
Texel	Tajimas'D	22	29700000	29800000	Health	Trichostrongylus_colubriformis_FEC	
Texel	Tajimas'D	26	16400000	16500000	Health	Change_in_hematocrit	
Texel	Tajimas'D	26	16400000	16500000	Health	Worm_count	
Texel	Tajimas'D	26	16400000	16500000	Health	Eggs_per_worm	
Texel	Tajimas'D	2	21100000	21200000	Meat_and_Carcass	Meat_arachidonic_acid_content	
Texel	Tajimas'D	2	21100000	21200000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content	

Texel	Tajimas'D	2	21100000	21200000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Texel	Tajimas'D	2	21100000	21200000	Meat_and_Carcass	Meat_linolenic_acid_content
Texel	Tajimas'D	2	68400000	68500000	Meat_and_Carcass	Hot_carcass_weight
Texel	Tajimas'D	2	71400000	71500000	Meat_and_Carcass	Backfat_at_third_lumbar
Texel	Tajimas'D	2	78000000	78100000	Meat_and_Carcass	Ultimate_pH
Texel	Tajimas'D	2	78000000	78100000	Meat_and_Carcass	Meat_color_a*
Texel	Tajimas'D	2	93300000	93400000	Meat_and_Carcass	Meat_color_L*
Texel	Tajimas'D	2	93300000	93400000	Meat_and_Carcass	Meat_color_b*
Texel	Tajimas'D	2	93300000	93400000	Meat_and_Carcass	Meat_color_a*
Texel	Tajimas'D	2	104300000	104400000	Meat_and_Carcass	Shear_force
Texel	Tajimas'D	2	104300000	104400000	Meat_and_Carcass	Meat_color_L*
Texel	Tajimas'D	2	104300000	104400000	Meat_and_Carcass	Hindquarter_weight
Texel	Tajimas'D	2	114100000	114200000	Meat_and_Carcass	Foreleg_length
Texel	Tajimas'D	2	191000000	191100000	Meat_and_Carcass	Hot_carcass_weight
Texel	Tajimas'D	1	40700000	40800000	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	1	40700000	40800000	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	Tajimas'D	1	40700000	40800000	Meat_and_Carcass	Carcass_fat_percentage
Texel	Tajimas'D	1	40700000	40800000	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	1	40700000	40800000	Meat_and_Carcass	Bone_weight_in_carcass
Texel	Tajimas'D	1	46000000	46100000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Texel	Tajimas'D	1	46000000	46100000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Texel	Tajimas'D	1	46000000	46100000	Meat_and_Carcass	Carcass_bone_percentage
Texel	Tajimas'D	1	53000000	53100000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Texel	Tajimas'D	1	95500000	95600000	Meat_and_Carcass	Backfat_at_third_lumbar
Texel	Tajimas'D	1	95500000	95600000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Texel	Tajimas'D	1	177800000	177900000	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	1	177800000	177900000	Meat_and_Carcass	Carcass_fat_percentage
Texel	Tajimas'D	1	177800000	177900000	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	1	177800000	177900000	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	Tajimas'D	1	194000000	194100000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Texel	Tajimas'D	3	63700000	63800000	Meat_and_Carcass	internal_fat_amount

Texel	Tajimas'D	3	63700000	63800000	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Texel	Tajimas'D	5	65300000	65400000	Meat_and_Carcass	Meat_palmitoleic_acid_content
Texel	Tajimas'D	6	22300000	22400000	Meat_and_Carcass	fat_weight_in_carcass
Texel	Tajimas'D	6	22300000	22400000	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	6	22300000	22400000	Meat_and_Carcass	Carcass_fat_percentage
Texel	Tajimas'D	6	22300000	22400000	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	Tajimas'D	6	22300000	22400000	Meat_and_Carcass	fat_weight_in_carcass
Texel	Tajimas'D	6	22300000	22400000	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	Tajimas'D	6	22300000	22400000	Meat_and_Carcass	Hot_carcass_weight
Texel	Tajimas'D	7	12600000	12700000	Meat_and_Carcass	Longissimus_muscle_area
Texel	Tajimas'D	7	12600000	12700000	Meat_and_Carcass	Longissimus_muscle_area
Texel	Tajimas'D	8	61500000	61600000	Meat_and_Carcass	internal_fat_amount
Texel	Tajimas'D	9	20800000	20900000	Meat_and_Carcass	Longissimus_muscle_area
Texel	Tajimas'D	9	20800000	20900000	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	9	20800000	20900000	Meat_and_Carcass	Hot_carcass_weight
Texel	Tajimas'D	9	31800000	31900000	Meat_and_Carcass	Longissimus_muscle_area
Texel	Tajimas'D	9	47900000	4.8e+07	Meat_and_Carcass	Longissimus_muscle_area
Texel	Tajimas'D	9	47900000	4.8e+07	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	10	6400000	6500000	Meat_and_Carcass	Carcass_fat_percentage
Texel	Tajimas'D	10	6400000	6500000	Meat_and_Carcass	Carcass_bone_percentage
Texel	Tajimas'D	10	6400000	6500000	Meat_and_Carcass	fat_weight_in_carcass
Texel	Tajimas'D	10	6400000	6500000	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	Tajimas'D	12	20900000	2.1e+07	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	Tajimas'D	12	20900000	2.1e+07	Meat_and_Carcass	Carcass_fat_percentage
Texel	Tajimas'D	13	39200000	39300000	Meat_and_Carcass	muscle_weight_in_carcass
Texel	Tajimas'D	14	27300000	27400000	Meat_and_Carcass	Bone_weight_in_carcass
Texel	Tajimas'D	14	27300000	27400000	Meat_and_Carcass	Dressing_percentage
Texel	Tajimas'D	14	27300000	27400000	Meat_and_Carcass	fat_weight_in_carcass
Texel	Tajimas'D	14	27300000	27400000	Meat_and_Carcass	Dressing_percentage
Texel	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Lean_meat_yield_percentage
Texel	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Dressing_percentage

Texel	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Subcutaneous_fat_thickness	
Texel	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Subcutaneous_fat_area	
Texel	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Subcutaneous_fat_area	
Texel	Tajimas'D	16	63500000	63600000	Meat_and_Carcass	Lean_meat_yield_percentage	
Texel	Tajimas'D	18	15700000	15800000	Meat_and_Carcass	Meat_gadoleic_acid_content	
Texel	Tajimas'D	18	15700000	15800000	Meat_and_Carcass	Meat_docosahexaenoic_acid_content	
Texel	Tajimas'D	18	36100000	36200000	Meat_and_Carcass	Carcass_fat_percentage	
Texel	Tajimas'D	18	51700000	51800000	Meat_and_Carcass	Muscle_depth_at_third_lumbar	
Texel	Tajimas'D	19	8500000	8600000	Meat_and_Carcass	Dressing_percentage	
Texel	Tajimas'D	20	24600000	24700000	Meat_and_Carcass	Metacarpal_length	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_oleic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_linolenic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_gadoleic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_stearic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_cis-vaccenic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_linoleic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_arachidonic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_palmitic_acid_content	
Texel	Tajimas'D	21	33600000	33700000	Meat_and_Carcass	Meat_myristic_acid_content	
Texel	Tajimas'D	23	44100000	44200000	Meat_and_Carcass	Lean_meat_yield_percentage	
Texel	Tajimas'D	23	44100000	44200000	Meat_and_Carcass	Carcass_fat_percentage	
Texel	Tajimas'D	23	44100000	44200000	Meat_and_Carcass	fat_weight_in_carcass	
Texel	Tajimas'D	23	44100000	44200000	Meat_and_Carcass	Hot_carcass_weight	
Texel	Tajimas'D	24	5500000	5600000	Meat_and_Carcass	Bone_weight_in_carcass	
Texel	Tajimas'D	26	16400000	16500000	Meat_and_Carcass	muscle_weight_in_carcass	
Texel	Tajimas'D	2	21100000	21200000	Milk	Milk_fat_percentage	
Texel	Tajimas'D	2	126300000	126400000	Milk	milk_lactose_yield	
Texel	Tajimas'D	2	141100000	141200000	Milk	Milk_Yield	
Texel	Tajimas'D	2	178100000	178200000	Milk	Milk_Yield	
Texel	Tajimas'D	1	67600000	67800000	Milk	Curd_firmness	rs415652107

Texel	Tajimas'D	1	67600000	67800000	Milk	Curd_firmness	rs427009325
Texel	Tajimas'D	1	67600000	67800000	Milk	Rennet_coagulation_time	rs427009325
Texel	Tajimas'D	1	67600000	67800000	Milk	Cheese_yield	
Texel	Tajimas'D	1	97500000	97600000	Milk	Milk_fat_percentage	
Texel	Tajimas'D	1	97500000	97600000	Milk	Milk_Yield	
Texel	Tajimas'D	1	97500000	97600000	Milk	Milk_protein_percentage	
Texel	Tajimas'D	1	106800000	106900000	Milk	Milk_Yield	
Texel	Tajimas'D	1	106800000	106900000	Milk	Milk_protein_percentage	
Texel	Tajimas'D	1	106800000	106900000	Milk	Milk_fat_percentage	
Texel	Tajimas'D	1	194000000	194100000	Milk	Milk_protein_yield	
Texel	Tajimas'D	25	14300000	14400000	Milk	Milk_fat_percentage	
Texel	Tajimas'D	25	14300000	14400000	Milk	Useful_yield_content	
Texel	Tajimas'D	25	19900000	20100000	Milk	Milk_fat_yield_{180d}	rs55630724
Texel	Tajimas'D	3	63700000	63800000	Milk	Milk_fat_percentage	
Texel	Tajimas'D	3	63700000	63800000	Milk	Milk_Yield	
Texel	Tajimas'D	3	63700000	63800000	Milk	milk_lactose_yield	
Texel	Tajimas'D	3	63700000	63800000	Milk	Milk_protein_yield	
Texel	Tajimas'D	3	63700000	63800000	Milk	Milk_fat_yield	
Texel	Tajimas'D	3	134800000	134900000	Milk	Milk_protein_percentage	
Texel	Tajimas'D	6	64500000	64600000	Milk	Curd_firmness	rs403326504
Texel	Tajimas'D	6	78700000	78800000	Milk	Useful_yield_content	
Texel	Tajimas'D	7	42200000	42300000	Milk	Milk_protein_percentage	
Texel	Tajimas'D	8	83100000	83200000	Milk	milk_lactose_yield	
Texel	Tajimas'D	9	20800000	20900000	Milk	Useful_yield_content	
Texel	Tajimas'D	9	75000000	75100000	Milk	Milk_fat_yield	
Texel	Tajimas'D	12	20900000	2.1e+07	Milk	Milk_Yield	
Texel	Tajimas'D	14	48300000	48400000	Milk	milk_lactose_yield	
Texel	Tajimas'D	15	53100000	53200000	Milk	milk_linoleic_acid_content	
Texel	Tajimas'D	15	53100000	53200000	Milk	Milk_Yield	
Texel	Tajimas'D	15	53100000	53200000	Milk	milk_conjugated_linoleic_acid_content	
Texel	Tajimas'D	18	15700000	15800000	Milk	Milk_Yield	

Texel	Tajimas'D	19	39100000	39200000	Milk	Milk_fat_yield_{180d}	rs410133961
Texel	Tajimas'D	20	3500000	3600000	Milk	Milk_Yield	
Texel	Tajimas'D	20	24600000	24700000	Milk	Milk_Yield	
Texel	Tajimas'D	20	24600000	24700000	Milk	Milk_protein_yield	
Texel	Tajimas'D	20	24600000	24700000	Milk	milk_lactose_yield	
Texel	Tajimas'D	20	24600000	24700000	Milk	Milk_fat_yield	
Texel	Tajimas'D	23	44100000	44200000	Milk	Milk_fat_yield	
Texel	Tajimas'D	23	44100000	44200000	Milk	Milk_Yield	
Texel	Tajimas'D	24	5500000	5600000	Milk	Milk_Yield	
Texel	Tajimas'D	24	5500000	5600000	Milk	Milk_protein_persistency	
Texel	Tajimas'D	24	5500000	5600000	Milk	Milk_fat_yield_{180d}	rs409836362
Texel	Tajimas'D	2	68400000	68500000	Production	Body_weight	
Texel	Tajimas'D	2	78000000	78100000	Production	Body_weight	
Texel	Tajimas'D	2	191000000	191100000	Production	Body_weight	
Texel	Tajimas'D	2	248500000	248600000	Production	bone_density	
Texel	Tajimas'D	1	95500000	95600000	Production	Body_weight	
Texel	Tajimas'D	1	106800000	106900000	Production	bone_density	
Texel	Tajimas'D	3	81700000	81800000	Production	Average_daily_gain	
Texel	Tajimas'D	3	81700000	81800000	Production	Body_weight	
Texel	Tajimas'D	3	134800000	134900000	Production	Body_weight	
Texel	Tajimas'D	3	134800000	134900000	Production	Body_weight	
Texel	Tajimas'D	4	26000000	26100000	Production	Body_weight	
Texel	Tajimas'D	4	29400000	29500000	Production	Body_weight	
Texel	Tajimas'D	5	65300000	65400000	Production	Body_weight	
Texel	Tajimas'D	6	22300000	22400000	Production	Body_weight	
Texel	Tajimas'D	8	83100000	83200000	Production	Body_weight	
Texel	Tajimas'D	8	84700000	84800000	Production	Body_weight	
Texel	Tajimas'D	12	35500000	35600000	Production	bone_density	
Texel	Tajimas'D	14	27300000	27400000	Production	Total_bone	
Texel	Tajimas'D	14	27300000	27400000	Production	Total_bone	
Texel	Tajimas'D	14	48300000	48400000	Production	Body_weight	

Texel	Tajimas'D	14	48300000	48400000	Production	Age_at_maximum_daily_gain	
Texel	Tajimas'D	14	48300000	48400000	Production	Average_daily_gain	
Texel	Tajimas'D	16	36600000	36700000	Production	Body_weight	
Texel	Tajimas'D	17	60900000	6.1e+07	Production	bone_density	
Texel	Tajimas'D	18	41800000	41900000	Production	Average_daily_gain	
Texel	Tajimas'D	21	33600000	33700000	Production	Body_weight	
Texel	Tajimas'D	21	33600000	33700000	Production	Average_daily_gain	
Texel	Tajimas'D	23	44100000	44200000	Production	Body_weight	
Texel	Tajimas'D	24	18800000	18900000	Production	bone_density	
Texel	Tajimas'D	26	16400000	16500000	Production	Average_daily_gain	
Texel	Tajimas'D	1	177800000	177900000	Reproduction	Reproductive_seasonality	
Texel	Tajimas'D	1	194000000	194100000	Reproduction	Reproductive_seasonality	
Texel	Tajimas'D	25	14300000	14400000	Reproduction	Testes_weight	
Texel	Tajimas'D	4	62400000	62500000	Reproduction	Reproductive_seasonality	rs412475510
Texel	Tajimas'D	10	27000000	27100000	Reproduction	Testes_weight	
Texel	Tajimas'D	15	13900000	1.4e+07	Reproduction	Total_lambs_born	rs428235301
Texel	Tajimas'D	17	24400000	24500000	Reproduction	Reproductive_seasonality	
Texel	Tajimas'D	18	11700000	11800000	Reproduction	Testes_weight	
Texel	Tajimas'D	19	8500000	8600000	Reproduction	Reproductive_seasonality	
Texel	Tajimas'D	20	3500000	3600000	Reproduction	Testes_weight	
Texel	Tajimas'D	20	3500000	3600000	Reproduction	Testes_weight	
Texel	Tajimas'D	24	5500000	5600000	Reproduction	Testes_weight	
Texel	Tajimas'D	24	5500000	5600000	Reproduction	Testes_weight	
Texel	Tajimas'D	1	177800000	177900000	Wool	Fleece_yield	
Texel	Tajimas'D	1	219200000	219300000	Wool	Fleece_yield	
Texel	Tajimas'D	25	14300000	14400000	Wool	Mean_fiber_diameter	
Texel	Tajimas'D	25	14300000	14400000	Wool	mary_fiber_diameter_coefficient_of_variance	
Texel	Tajimas'D	25	14300000	14400000	Wool	Greasy_fleece_weight	
Texel	Tajimas'D	25	14300000	14400000	Wool	Staple_length	
Texel	Tajimas'D	3	23300000	23400000	Wool	Staple_length	
Texel	Tajimas'D	4	600000	7.00E+05	Wool	mary_fiber_diameter_coefficient_of_variance	

Texel	Tajimas'D	6	22300000	22400000	Wool	Mean_fiber_diameter	
Texel	Tajimas'D	7	12600000	12700000	Wool	mary_fiber_diameter_coefficient_of_variance	
Texel	Tajimas'D	7	12600000	12700000	Wool	Staple_length	
Texel	Tajimas'D	15	53100000	53200000	Wool	Staple_length	
Texel	Tajimas'D	18	11700000	11800000	Wool	Staple_length	
Vendeen	Tajimas'D	2	2800000	3.00E+06	Exterior	Horn_type	rs405950129
Vendeen	Tajimas'D	2	35900000	3.6e+07	Exterior	Rump_width	
Vendeen	Tajimas'D	2	78300000	78400000	Exterior	Brown	
Vendeen	Tajimas'D	3	116800000	116900000	Exterior	Horn_type	rs400745188
Vendeen	Tajimas'D	3	117000000	117200000	Exterior	Teat_number	rs424780352
Vendeen	Tajimas'D	5	53500000	53700000	Exterior	Foot_angle	
Vendeen	Tajimas'D	10	26200000	26300000	Exterior	Horns	
Vendeen	Tajimas'D	10	26200000	26300000	Exterior	Horn_type	rs401874488
Vendeen	Tajimas'D	10	26200000	26300000	Exterior	Horn_circumference	rs401874488
Vendeen	Tajimas'D	10	29300000	29400000	Exterior	Horn_type	rs422288687
Vendeen	Tajimas'D	10	29300000	29400000	Exterior	Horn_type	rs401128289
Vendeen	Tajimas'D	10	29300000	29400000	Exterior	Horn_type	rs408317317
Vendeen	Tajimas'D	10	30700000	30800000	Exterior	Horn_type	rs420518739
Vendeen	Tajimas'D	7	3300000	3400000	Exterior	Teat_placement	
Vendeen	Tajimas'D	15	1500000	1600000	Exterior	udder_shape	
Vendeen	Tajimas'D	23	18400000	18500000	Exterior	Rear_leg_set	
Vendeen	Tajimas'D	23	18400000	18500000	Exterior	Foot_angle	
Vendeen	Tajimas'D	2	59900000	6.00E+07	Health	Trichostrongylus_adult_and_larva_count	
Vendeen	Tajimas'D	2	93300000	93400000	Health	Somatic_cell_score	
Vendeen	Tajimas'D	2	115100000	115200000	Health	Nematodirus_FEC	
Vendeen	Tajimas'D	2	135500000	135600000	Health	Fecal_egg_count	rs400833119
Vendeen	Tajimas'D	2	224200000	224300000	Health	Worm_count	
Vendeen	Tajimas'D	2	224200000	224300000	Health	Change_in_hematocrit	
Vendeen	Tajimas'D	2	224200000	224300000	Health	Haemonchus_contortus_FEC	
Vendeen	Tajimas'D	3	9200000	9300000	Health	Haemonchus_contortus_FEC	
Vendeen	Tajimas'D	3	24000000	24100000	Health	Trichostrongylus_colubriformis_FEC	

Vendeen	Tajimas'D	3	107900000	1.08e+08	Health	facial_eczema_susceptibility	
Vendeen	Tajimas'D	3	116800000	116900000	Health	Trichostrongylus_colubriformis_FEC	
Vendeen	Tajimas'D	3	128300000	128400000	Health	Change_in_eosinophil_number	
Vendeen	Tajimas'D	3	158900000	1.59e+08	Health	Strongyle_FEC	
Vendeen	Tajimas'D	3	177200000	177300000	Health	Hematocrit	
Vendeen	Tajimas'D	5	26200000	26300000	Health	Inherited_Ovine_Arthrogryposis	
Vendeen	Tajimas'D	5	26200000	26300000	Health	Blood_albumin_level	
Vendeen	Tajimas'D	10	26200000	26300000	Health	Fecal_egg_count	
Vendeen	Tajimas'D	10	26200000	26300000	Health	Somatic_cell_score	
Vendeen	Tajimas'D	1	180300000	180400000	Health	Salmonella_abortusovis_susceptibility	
Vendeen	Tajimas'D	1	212500000	212600000	Health	Fecal_egg_count	
Vendeen	Tajimas'D	1	212500000	212600000	Health	Trichostrongylus_colubriformis_FEC	
Vendeen	Tajimas'D	1	218400000	218500000	Health	cholesterol_level_(total)	
Vendeen	Tajimas'D	4	15900000	1.6e+07	Health	Haemonchus_contortus_FEC	
Vendeen	Tajimas'D	4	38100000	38200000	Health	Nematodirus_FEC	rs409420664
Vendeen	Tajimas'D	6	24200000	24300000	Health	facial_eczema_susceptibility	
Vendeen	Tajimas'D	6	37700000	37800000	Health	Fecal_egg_count	
Vendeen	Tajimas'D	6	66900000	6.7e+07	Health	Fecal_egg_count	
Vendeen	Tajimas'D	6	108400000	108500000	Health	Trichostrongylus_colubriformis_FEC	
Vendeen	Tajimas'D	7	49500000	49600000	Health	Haemonchus_contortus_FEC	
Vendeen	Tajimas'D	8	1300000	1400000	Health	Trichostrongylus_adult_and_larva_count	
Vendeen	Tajimas'D	8	63300000	63400000	Health	Fecal_egg_count	
Vendeen	Tajimas'D	9	7900000	8.00E+06	Health	Fecal_egg_count	
Vendeen	Tajimas'D	9	30600000	30700000	Health	Salmonella_abortusovis_susceptibility	
Vendeen	Tajimas'D	11	5800000	5900000	Health	Trichostrongylus_adult_and_larva_count	
Vendeen	Tajimas'D	12	63500000	63600000	Health	Trichostrongylus_colubriformis_FEC	
Vendeen	Tajimas'D	13	22100000	22200000	Health	Salmonella_abortusovis_susceptibility	
Vendeen	Tajimas'D	13	68900000	6.9e+07	Health	Fecal_egg_count	
Vendeen	Tajimas'D	14	31700000	31800000	Health	Nematodirus_FEC	
Vendeen	Tajimas'D	14	31700000	31800000	Health	Nematodirus_FEC	
Vendeen	Tajimas'D	15	42300000	42400000	Health	facial_eczema_susceptibility	

Vendeen	Tajimas'D	17	20400000	20500000	Health	Fecal_egg_count	
Vendeen	Tajimas'D	18	2700000	2800000	Health	Hematocrit	
Vendeen	Tajimas'D	18	21900000	2.2e+07	Health	Salmonella_abortusovis_susceptibility	
Vendeen	Tajimas'D	18	31500000	31600000	Health	Worm_count	
Vendeen	Tajimas'D	18	42100000	42200000	Health	Haemonchus_contortus_FEC	
Vendeen	Tajimas'D	20	25200000	25300000	Health	Salmonella_abortusovis_susceptibility	
Vendeen	Tajimas'D	20	25200000	25300000	Health	Immunoglobulin_A_level	
Vendeen	Tajimas'D	20	25200000	25300000	Health	Salmonella_abortusovis_susceptibility	
Vendeen	Tajimas'D	22	14900000	1.5e+07	Health	Somatic_cell_score	
Vendeen	Tajimas'D	22	32600000	32700000	Health	Trichostrongylus_colubriformis_FEC	
Vendeen	Tajimas'D	22	37600000	37700000	Health	scrapie_susceptibility	
Vendeen	Tajimas'D	22	38800000	38900000	Health	Maedi-Visna_virus_susceptibility	rs411162381
Vendeen	Tajimas'D	23	18400000	18500000	Health	Immunoglobulin_E_level	
Vendeen	Tajimas'D	23	18400000	18500000	Health	Immunoglobulin_G_level	
Vendeen	Tajimas'D	23	18400000	18500000	Health	Fecal_egg_count	
Vendeen	Tajimas'D	23	35600000	35700000	Health	Worm_count	
Vendeen	Tajimas'D	26	16300000	16400000	Health	Change_in_hematocrit	
Vendeen	Tajimas'D	26	16300000	16400000	Health	Worm_count	
Vendeen	Tajimas'D	26	16300000	16400000	Health	Eggs_per_worm	
Vendeen	Tajimas'D	2	2800000	3.00E+06	Meat_and_Carcass	Meat_arachidonic_acid_content	
Vendeen	Tajimas'D	2	26000000	26100000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content	
Vendeen	Tajimas'D	2	26000000	26100000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content	
Vendeen	Tajimas'D	2	26000000	26100000	Meat_and_Carcass	Meat_linolenic_acid_content	
Vendeen	Tajimas'D	2	57800000	57900000	Meat_and_Carcass	Hot_carcass_weight	
Vendeen	Tajimas'D	2	78300000	78400000	Meat_and_Carcass	Ultimate_pH	
Vendeen	Tajimas'D	2	78300000	78400000	Meat_and_Carcass	Meat_color_a*	
Vendeen	Tajimas'D	2	87000000	87100000	Meat_and_Carcass	Meat_color_L*	
Vendeen	Tajimas'D	2	87000000	87100000	Meat_and_Carcass	Meat_color_b*	
Vendeen	Tajimas'D	2	87000000	87100000	Meat_and_Carcass	Meat_color_a*	
Vendeen	Tajimas'D	2	105100000	105200000	Meat_and_Carcass	Shear_force	
Vendeen	Tajimas'D	2	105100000	105200000	Meat_and_Carcass	Meat_color_L*	

Vendeen	Tajimas'D	2	105100000	105200000	Meat_and_Carcass	Hindquarter_weight
Vendeen	Tajimas'D	2	115100000	115200000	Meat_and_Carcass	Foreleg_length
Vendeen	Tajimas'D	2	128700000	128800000	Meat_and_Carcass	Loin_yield
Vendeen	Tajimas'D	2	135500000	135600000	Meat_and_Carcass	Leg_muscle_weight
Vendeen	Tajimas'D	2	135500000	135600000	Meat_and_Carcass	Subcutaneous_fat_thickness
Vendeen	Tajimas'D	3	63900000	6.4e+07	Meat_and_Carcass	internal_fat_amount
Vendeen	Tajimas'D	3	63900000	6.4e+07	Meat_and_Carcass	Meat_conjugated_linoleic_acid_content
Vendeen	Tajimas'D	3	97000000	97100000	Meat_and_Carcass	internal_fat_amount
Vendeen	Tajimas'D	5	21100000	21200000	Meat_and_Carcass	Meat_palmitoleic_acid_content
Vendeen	Tajimas'D	10	26200000	26300000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	Tajimas'D	10	26200000	26300000	Meat_and_Carcass	Carcass_bone_percentage
Vendeen	Tajimas'D	10	26200000	26300000	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	Tajimas'D	10	26200000	26300000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	10	72600000	72700000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	10	72600000	72700000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	Tajimas'D	10	72600000	72700000	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	Tajimas'D	1	11700000	11800000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	1	11700000	11800000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	1	12800000	12900000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	Tajimas'D	1	33900000	3.4e+07	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	1	40300000	40400000	Meat_and_Carcass	Bone_weight_in_carcass
Vendeen	Tajimas'D	1	50400000	50500000	Meat_and_Carcass	Meat_docosapentaenoic_acid_content
Vendeen	Tajimas'D	1	50400000	50500000	Meat_and_Carcass	Meat_eicosapentaenoic_acid_content
Vendeen	Tajimas'D	1	50400000	50500000	Meat_and_Carcass	Carcass_bone_percentage
Vendeen	Tajimas'D	1	50400000	50500000	Meat_and_Carcass	Meat_polyunsaturated_fatty_acid_content
Vendeen	Tajimas'D	1	86300000	86400000	Meat_and_Carcass	Backfat_at_third_lumbar
Vendeen	Tajimas'D	1	86300000	86400000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Vendeen	Tajimas'D	1	142000000	142100000	Meat_and_Carcass	Bone_weight_in_carcass
Vendeen	Tajimas'D	1	142000000	142100000	Meat_and_Carcass	Carcass_bone_percentage
Vendeen	Tajimas'D	1	163800000	163900000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	1	163800000	163900000	Meat_and_Carcass	Carcass_fat_percentage

Vendeen	Tajimas'D	1	180300000	180400000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	1	180300000	180400000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	1	193700000	193800000	Meat_and_Carcass	Muscle_depth_at_third_lumbar
Vendeen	Tajimas'D	1	218400000	218500000	Meat_and_Carcass	Carcass_length
Vendeen	Tajimas'D	1	218400000	218500000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	Tajimas'D	1	218400000	218500000	Meat_and_Carcass	Abdominal_fat_weight
Vendeen	Tajimas'D	6	21900000	2.2e+07	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	Tajimas'D	6	21900000	2.2e+07	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	6	21900000	2.2e+07	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	Tajimas'D	6	21900000	2.2e+07	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	6	21900000	2.2e+07	Meat_and_Carcass	fat_weight_in_carcass
Vendeen	Tajimas'D	6	21900000	2.2e+07	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	6	21900000	2.2e+07	Meat_and_Carcass	Hot_carcass_weight
Vendeen	Tajimas'D	6	37700000	37800000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	Tajimas'D	7	3300000	3400000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	Tajimas'D	7	49500000	49600000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	Tajimas'D	8	1300000	1400000	Meat_and_Carcass	internal_fat_amount
Vendeen	Tajimas'D	9	3300000	3400000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	Tajimas'D	9	3300000	3400000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	9	20500000	20600000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	Tajimas'D	9	30600000	30700000	Meat_and_Carcass	Longissimus_muscle_area
Vendeen	Tajimas'D	9	67600000	67700000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	11	5800000	5900000	Meat_and_Carcass	internal_fat_amount
Vendeen	Tajimas'D	11	5800000	5900000	Meat_and_Carcass	Hot_carcass_weight
Vendeen	Tajimas'D	12	13400000	13500000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	12	13400000	13500000	Meat_and_Carcass	Carcass_fat_percentage
Vendeen	Tajimas'D	13	22100000	22200000	Meat_and_Carcass	muscle_weight_in_carcass
Vendeen	Tajimas'D	14	31700000	31800000	Meat_and_Carcass	Bone_weight_in_carcass
Vendeen	Tajimas'D	15	72200000	72300000	Meat_and_Carcass	Hind_leg_length
Vendeen	Tajimas'D	16	14700000	14800000	Meat_and_Carcass	Lean_meat_yield_percentage
Vendeen	Tajimas'D	16	14700000	14800000	Meat_and_Carcass	Dressing_percentage

Vendeen	Tajimas'D	16	14700000	14800000	Meat_and_Carcass	Subcutaneous_fat_thickness	
Vendeen	Tajimas'D	16	14700000	14800000	Meat_and_Carcass	Subcutaneous_fat_area	
Vendeen	Tajimas'D	16	36600000	36700000	Meat_and_Carcass	Subcutaneous_fat_area	
Vendeen	Tajimas'D	18	21900000	2.2e+07	Meat_and_Carcass	Meat_gadoleic_acid_content	
Vendeen	Tajimas'D	18	21900000	2.2e+07	Meat_and_Carcass	Meat_docosaheptaenoic_acid_content	
Vendeen	Tajimas'D	18	33700000	33800000	Meat_and_Carcass	Carcass_fat_percentage	
Vendeen	Tajimas'D	19	22400000	22500000	Meat_and_Carcass	Dressing_percentage	
Vendeen	Tajimas'D	20	25200000	25300000	Meat_and_Carcass	Metacarpal_length	
Vendeen	Tajimas'D	22	37600000	37700000	Meat_and_Carcass	Muscle_density	
Vendeen	Tajimas'D	22	37600000	37700000	Meat_and_Carcass	Carcass_bone_percentage	
Vendeen	Tajimas'D	23	18400000	18500000	Meat_and_Carcass	Lean_meat_yield_percentage	
Vendeen	Tajimas'D	23	18400000	18500000	Meat_and_Carcass	muscle_weight_in_carcass	
Vendeen	Tajimas'D	23	18400000	18500000	Meat_and_Carcass	Carcass_fat_percentage	
Vendeen	Tajimas'D	23	18400000	18500000	Meat_and_Carcass	fat_weight_in_carcass	
Vendeen	Tajimas'D	23	18400000	18500000	Meat_and_Carcass	Hot_carcass_weight	
Vendeen	Tajimas'D	23	18400000	18500000	Meat_and_Carcass	Lean_meat_yield_percentage	
Vendeen	Tajimas'D	23	18400000	18500000	Meat_and_Carcass	fat_weight_in_carcass	
Vendeen	Tajimas'D	25	38700000	38800000	Meat_and_Carcass	Tail_fat_deposition	1051,rs414718545,rs41
Vendeen	Tajimas'D	26	16300000	16400000	Meat_and_Carcass	muscle_weight_in_carcass	
Vendeen	Tajimas'D	2	26000000	26100000	Milk	Milk_fat_percentage	
Vendeen	Tajimas'D	2	128700000	128800000	Milk	milk_lactose_yield	
Vendeen	Tajimas'D	2	143200000	143300000	Milk	Milk_Yield	
Vendeen	Tajimas'D	3	50100000	50200000	Milk	Milk_fat_persistence	
Vendeen	Tajimas'D	3	53900000	5.4e+07	Milk	Milk_fat_percentage	
Vendeen	Tajimas'D	3	63900000	6.4e+07	Milk	Milk_Yield	
Vendeen	Tajimas'D	3	63900000	6.4e+07	Milk	milk_lactose_yield	
Vendeen	Tajimas'D	3	63900000	6.4e+07	Milk	Milk_protein_yield	
Vendeen	Tajimas'D	3	63900000	6.4e+07	Milk	Milk_fat_yield	
Vendeen	Tajimas'D	3	135300000	135400000	Milk	Milk_protein_percentage	
Vendeen	Tajimas'D	3	146800000	146900000	Milk	Milk_protein_percentage	
Vendeen	Tajimas'D	1	12800000	12900000	Milk	Milk_fat_yield_{180d}	rs415682316

Vendeen	Tajimas'D	1	86300000	86400000	Milk	Milk_Yield	
Vendeen	Tajimas'D	1	96500000	96600000	Milk	Milk_fat_percentage	
Vendeen	Tajimas'D	1	96500000	96600000	Milk	Milk_Yield	
Vendeen	Tajimas'D	1	96500000	96600000	Milk	Milk_protein_percentage	
Vendeen	Tajimas'D	1	163800000	163900000	Milk	Milk_fat_yield_{180d}	rs403948493
Vendeen	Tajimas'D	4	16100000	16200000	Milk	Milk_fat_yield_{180d}	rs159754185
Vendeen	Tajimas'D	4	90400000	90500000	Milk	Milk_Yield_{180d}	rs417538180
Vendeen	Tajimas'D	6	28100000	28200000	Milk	Milk_fat_yield_{180d}	rs409230879
Vendeen	Tajimas'D	6	55500000	55600000	Milk	Milk_fat_yield_{180d}	rs417431015
Vendeen	Tajimas'D	6	82400000	82500000	Milk	Useful_yield_content	
Vendeen	Tajimas'D	8	28400000	28500000	Milk	Milk_fat_percentage	
Vendeen	Tajimas'D	9	7900000	8.00E+06	Milk	Useful_yield_content	
Vendeen	Tajimas'D	9	78600000	78700000	Milk	Milk_fat_yield	
Vendeen	Tajimas'D	11	5800000	5900000	Milk	milk_conjugated_linoleic_acid_content	
Vendeen	Tajimas'D	12	24200000	24300000	Milk	Milk_Yield	
Vendeen	Tajimas'D	18	21900000	2.2e+07	Milk	Milk_Yield	
Vendeen	Tajimas'D	19	25700000	25800000	Milk	Milk_fat_yield_{180d}	rs418877029
Vendeen	Tajimas'D	20	11300000	11400000	Milk	Milk_Yield	
Vendeen	Tajimas'D	20	11300000	11400000	Milk	Milk_Yield	
Vendeen	Tajimas'D	20	11300000	11400000	Milk	Milk_protein_yield	
Vendeen	Tajimas'D	20	11300000	11400000	Milk	milk_lactose_yield	
Vendeen	Tajimas'D	20	25200000	25300000	Milk	Milk_fat_yield	
Vendeen	Tajimas'D	23	59400000	59500000	Milk	Milk_fat_yield	
Vendeen	Tajimas'D	23	59400000	59500000	Milk	Milk_Yield	
Vendeen	Tajimas'D	2	35900000	3.6e+07	Production	Body_weight	
Vendeen	Tajimas'D	2	78300000	78400000	Production	Body_weight	
Vendeen	Tajimas'D	2	128700000	128800000	Production	Body_weight_(weaning)	
Vendeen	Tajimas'D	2	128700000	128800000	Production	Body_weight	
Vendeen	Tajimas'D	2	224200000	224300000	Production	bone_density	
Vendeen	Tajimas'D	2	224200000	224300000	Production	Body_weight	
Vendeen	Tajimas'D	3	135300000	135400000	Production	Body_weight	

Vendeen	Tajimas'D	3	135300000	135400000	Production	Body_weight	
Vendeen	Tajimas'D	3	158900000	1.59e+08	Production	Body_weight	rs407025577
Vendeen	Tajimas'D	5	21100000	21200000	Production	Body_weight	
Vendeen	Tajimas'D	5	89600000	89700000	Production	Body_weight	
Vendeen	Tajimas'D	5	89600000	89700000	Production	Age_at_maximum_daily_gain	
Vendeen	Tajimas'D	1	96500000	96600000	Production	Body_weight	
Vendeen	Tajimas'D	1	130000000	130100000	Production	bone_density	
Vendeen	Tajimas'D	4	15900000	1.6e+07	Production	Body_weight	
Vendeen	Tajimas'D	6	21900000	2.2e+07	Production	Body_weight	
Vendeen	Tajimas'D	6	21900000	2.2e+07	Production	Average_daily_gain	
Vendeen	Tajimas'D	6	37700000	37800000	Production	Body_weight	
Vendeen	Tajimas'D	6	40700000	40800000	Production	Average_daily_gain	rs428417571
Vendeen	Tajimas'D	6	40700000	40800000	Production	Kleiber_ratio	rs428417571
Vendeen	Tajimas'D	11	5800000	5900000	Production	Body_weight	
Vendeen	Tajimas'D	14	31700000	31800000	Production	Total_bone	
Vendeen	Tajimas'D	16	14700000	14800000	Production	Body_weight	
Vendeen	Tajimas'D	16	14700000	14800000	Production	Body_weight	
Vendeen	Tajimas'D	17	20400000	20500000	Production	Body_weight	rs414335128
Vendeen	Tajimas'D	18	42100000	42200000	Production	Average_daily_gain	
Vendeen	Tajimas'D	23	18400000	18500000	Production	Body_weight	
Vendeen	Tajimas'D	26	16300000	16400000	Production	Average_daily_gain	
Vendeen	Tajimas'D	2	87000000	87100000	Reproduction	Total_lambs_born	rs402026120
Vendeen	Tajimas'D	3	177200000	177300000	Reproduction	Reproductive_seasonality	
Vendeen	Tajimas'D	10	26200000	26300000	Reproduction	Testes_weight	
Vendeen	Tajimas'D	1	163800000	163900000	Reproduction	Reproductive_seasonality	
Vendeen	Tajimas'D	1	193700000	193800000	Reproduction	Reproductive_seasonality	
Vendeen	Tajimas'D	17	20400000	20500000	Reproduction	Reproductive_seasonality	
Vendeen	Tajimas'D	18	2700000	2800000	Reproduction	Testes_weight	
Vendeen	Tajimas'D	19	22400000	22500000	Reproduction	Reproductive_seasonality	
Vendeen	Tajimas'D	20	11300000	11400000	Reproduction	Testes_weight	
Vendeen	Tajimas'D	20	11300000	11400000	Reproduction	Testes_weight	

Vendeen	Tajimas'D	20	11300000	11400000	Reproduction	Total_lambs_born	rs428348241
Vendeen	Tajimas'D	25	27600000	27700000	Reproduction	Testes_weight	
Vendeen	Tajimas'D	3	9200000	9300000	Wool	Staple_length	
Vendeen	Tajimas'D	1	151500000	151600000	Wool	Fleece_yield	
Vendeen	Tajimas'D	1	212500000	212600000	Wool	Fleece_yield	
Vendeen	Tajimas'D	1	245900000	2.46e+08	Wool	Fiber_curvature	
Vendeen	Tajimas'D	1	269300000	269400000	Wool	Greasy_fleece_weight	rs414744468
Vendeen	Tajimas'D	4	3100000	3200000	Wool	mary_fiber_diameter_coefficient_of_variance	
Vendeen	Tajimas'D	6	21900000	2.2e+07	Wool	Mean_fiber_diameter	
Vendeen	Tajimas'D	7	3300000	3400000	Wool	mary_fiber_diameter_coefficient_of_variance	
Vendeen	Tajimas'D	7	3300000	3400000	Wool	Staple_length	
Vendeen	Tajimas'D	15	42300000	42400000	Wool	Staple_length	
Vendeen	Tajimas'D	18	21900000	2.2e+07	Wool	Staple_length	
Vendeen	Tajimas'D	25	27600000	27700000	Wool	Mean_fiber_diameter	
Vendeen	Tajimas'D	25	27600000	27700000	Wool	mary_fiber_diameter_coefficient_of_variance	
Vendeen	Tajimas'D	25	27600000	27700000	Wool	Staple_length	

CHR: Chromosome

Supplementary Table S5. Gene Ontology and KEEG pathways of enriched genes within the selection signatures

Breed	Method	ID	Term	Gene_name	FDR
Charollais	iHS	GO:0031209	SCAR complex	<i>LOC101107565</i>	0.07083192
Charollais	iHS	GO:0033270	paranode region of axon	<i>NCMAP</i>	0.07083192
Charollais	iHS	GO:0043218	compact myelin	<i>NCMAP</i>	0.04730119
Charollais	iHS	GO:0043220	Schmidt-Lanterman incisure	<i>NCMAP</i>	0.04730119
Charollais	iHS	GO:0055037	recycling endosome	<i>ENSOARG00000005774, SLC36A2</i>	0.04730119
Charollais	iHS	GO:0055038	recycling endosome membrane	<i>ENSOARG00000005774, SLC36A2</i>	0.03399547
Charollais	iHS	GO:0071817	MMXD complex	<i>CIAO1</i>	0.04730119
Charollais	iHS	GO:0089701	U2AF complex	<i>ENSOARG00000011162</i>	0.09428309
Charollais	iHS	GO:0097361	CIA complex	<i>CIAO1</i>	0.04730119
Charollais	iHS	GO:0004122	cystathionine beta-synthase activity	<i>CBS</i>	0.09441430
Charollais	iHS	GO:0005280	amino acid:proton symporter activity	<i>SLC36A2</i>	0.09441430
Charollais	iHS	GO:0005297	proline:proton symporter activity	<i>SLC36A2</i>	0.09441430
Charollais	iHS	GO:0015180	L-alanine transmembrane transporter activity	<i>SLC36A2</i>	0.09441430
Charollais	iHS	GO:0015193	L-proline transmembrane transporter activity	<i>SLC36A2</i>	0.09441430
Charollais	iHS	GO:0015295	solute:proton symporter activity	<i>SLC36A2</i>	0.09441430
Charollais	iHS	GO:0030280	structural constituent of skin epidermis	<i>ENSOARG00000000377</i>	0.09441430
Suffolk	iHS	GO:0001527	microfibril	<i>MFAP5</i>	0.08778444
Suffolk	iHS	GO:0005783	endoplasmic reticulum	<i>PDIA3, RAB3GAP1, NBAS, LOC101119648</i>	0.09793660
Suffolk	iHS	GO:0005891	voltage-gated calcium channel complex	<i>CATSPER2, CACNG2</i>	0.08778444
Suffolk	iHS	GO:0008328	ionotropic glutamate receptor complex	<i>CACNG2</i>	0.08778444
Suffolk	iHS	GO:0016459	myosin complex	<i>MYH15, CGNL1</i>	0.08778444
Suffolk	iHS	GO:0031209	SCAR complex	<i>LOC101107565</i>	0.08778444
Suffolk	iHS	GO:0032281	AMPA glutamate receptor complex	<i>CACNG2</i>	0.08778444
Suffolk	iHS	GO:0034703	cation channel complex	<i>CATSPER2, CACNG2</i>	0.09793660
Suffolk	iHS	GO:0034704	calcium channel complex	<i>CATSPER2, CACNG2</i>	0.08778444

Suffolk	iHS	GO:0045211	postsynaptic membrane	<i>CHRNA4, CACNG2</i>	0.08778444
Suffolk	iHS	GO:0097060	synaptic membrane	<i>CHRNA4, CACNG2</i>	0.09656734
Suffolk	iHS	GO:0098685	Schaffer collateral - CA1 synapse	<i>CACNG2</i>	0.08778444
Suffolk	iHS	GO:0098686	hippocampal mossy fiber to CA3 synapse	<i>CACNG2</i>	0.08778444
Suffolk	iHS	GO:0098878	neurotransmitter receptor complex	<i>CACNG2</i>	0.08778444
Texel	iHS	GO:0031507	heterochromatin formation	<i>LOC101105238, ENSOARG00000021214, ENSOARG00000021254</i>	0.02222473
Texel	iHS	GO:0040029	epigenetic regulation of gene expression	<i>LOC101105238, ENSOARG00000021214, ENSOARG00000021254</i>	0.05573309
Texel	iHS	GO:0045814	negative regulation of gene expression, epigenetic	<i>LOC101105238, ENSOARG00000021214, ENSOARG00000021254</i>	0.03715956
Texel	iHS	GO:0070828	heterochromatin organization	<i>LOC101105238, ENSOARG00000021214, ENSOARG00000021254</i>	0.02222473
Texel	iHS	GO:0000333	telomerase catalytic core complex	<i>ENSOARG00000023121</i>	0.05030902
Texel	iHS	GO:0005882	intermediate filament	<i>KRT5, LOC101112805, KRT6A, LOC101111178, LOC101112555, LOC101111440, KRT82</i>	0.0000687547
Texel	iHS	GO:0030895	apolipoprotein B mRNA editing enzyme complex	<i>LOC101105238</i>	0.05030902
Texel	iHS	GO:0045095	keratin filament	<i>KRT5, LOC101112805, KRT6A, LOC101111178, LOC101112555, LOC101111440, KRT82</i>	0.0000044151
Texel	iHS	GO:0045111	intermediate filament cytoskeleton	<i>KRT5, LOC101112805, KRT6A, LOC101111178, LOC101112555, LOC101111440, KRT82</i>	0.0000687547
Texel	iHS	GO:0045293	mRNA editing complex	<i>LOC101105238</i>	0.09126741

Texel	iHS	GO:0090537	CERF complex	<i>ENSOARG00000013475</i>	0.05030902
Texel	iHS	GO:0099080	supramolecular complex	<i>KRT5, LOC101112805, KRT6A, LOC101111178, LOC101112555, LOC101111440, KRT82</i>	0.004118011
Texel	iHS	GO:0099081	supramolecular polymer	<i>KRT5, LOC101112805, KRT6A, LOC101111178, LOC101112555, LOC101111440, KRT82</i>	0.001426867
Texel	iHS	GO:0099512	supramolecular fiber	<i>KRT5, LOC101112805, KRT6A, LOC101111178, LOC101112555, LOC101111440, KRT82</i>	0.001426867
Texel	iHS	GO:0099513	polymeric cytoskeletal fiber	<i>KRT5, LOC101112805, KRT6A, LOC101111178, LOC101112555, LOC101111440, KRT82</i>	0.0006373936
Vendeen	iHS	GO:0001573	ganglioside metabolic process	<i>HEXA</i>	0.09731561
Vendeen	iHS	GO:0002701	negative regulation of production of molecular mediator of immune response	<i>TGFB2</i>	0.09088807
Vendeen	iHS	GO:0002719	negative regulation of cytokine production involved in immune response	<i>TGFB2</i>	0.09088807
Vendeen	iHS	GO:0005975	carbohydrate metabolic process	<i>ALDOB, OTOGL, HEXA, GLB1L, PYGL</i>	0.07903927
Vendeen	iHS	GO:0006082	organic acid metabolic process	<i>ALDOB, HPDL, KYNU, HEXA</i>	0.09088807
Vendeen	iHS	GO:0006307	DNA dealkylation involved in DNA repair	<i>FTO</i>	0.09088807
Vendeen	iHS	GO:0006423	cysteinyl-tRNA aminoacylation	<i>CARS2</i>	0.07903927
Vendeen	iHS	GO:0006520	amino acid metabolic process	<i>CARS2, HPDL, KYNU</i>	0.09611090
Vendeen	iHS	GO:0006689	ganglioside catabolic process	<i>HEXA</i>	0.08932564
Vendeen	iHS	GO:0006777	Mo-molybdopterin cofactor biosynthetic process	<i>MOCS1</i>	0.09731561
Vendeen	iHS	GO:0007178	transmembrane receptor protein serine/threonine kinase signaling pathway	<i>TGFB2, HEXA</i>	0.09611090

Vendeen	iHS	GO:0007584	response to nutrient	KYNU	0.09088807
Vendeen	iHS	GO:0007628	adult walking behavior	HEXA	0.09611090
Vendeen	iHS	GO:0008347	glial cell migration	TGFB2	0.09611090
Vendeen	iHS	GO:0009072	aromatic amino acid metabolic process	HPDL, KYNU	0.07903927
Vendeen	iHS	GO:0010002	cardioblast differentiation	TGFB2	0.07903927
Vendeen	iHS	GO:0010718	positive regulation of epithelial to mesenchymal transition	TGFB2	0.09731561
Vendeen	iHS	GO:0010934	macrophage cytokine production	TGFB2	0.09731561
Vendeen	iHS	GO:0010935	regulation of macrophage cytokine production	TGFB2	0.09731561
Vendeen	iHS	GO:0010936	negative regulation of macrophage cytokine production	TGFB2	0.08932564
Vendeen	iHS	GO:0014855	striated muscle cell proliferation	TGFB2	0.09088807
Vendeen	iHS	GO:0016054	organic acid catabolic process	KYNU, HEXA	0.09731561
Vendeen	iHS	GO:0019321	pentose metabolic process	OTOGL	0.09731561
Vendeen	iHS	GO:0019362	pyridine nucleotide metabolic process	ALDOB, KYNU	0.09611090
Vendeen	iHS	GO:0019377	glycolipid catabolic process	HEXA	0.09611090
Vendeen	iHS	GO:0019538	protein metabolic process	MOCS1, TESK2, KHDRBS3, CWC27, CARS2, TUSC3, ADAMTS3, CPEB3, DPP8, HEXA, PRKG2, TMPRSS7, CNPPD1, STK16	0.09731561
Vendeen	iHS	GO:0019566	arabinose metabolic process	OTOGL	0.08932564
Vendeen	iHS	GO:0019720	Mo-molybdopterin cofactor metabolic process	MOCS1	0.09731561
Vendeen	iHS	GO:0019752	carboxylic acid metabolic process	ALDOB, HPDL, KYNU, HEXA	0.09088807
Vendeen	iHS	GO:0019805	quinolinate biosynthetic process	KYNU	0.09088807
Vendeen	iHS	GO:0019953	sexual reproduction	, HEXA, SPATA16	0.09731561
Vendeen	iHS	GO:0030198	extracellular matrix organization	TGFB2, ADAMTS3	0.09088807
Vendeen	iHS	GO:0030205	dermatan sulfate metabolic process	HEXA	0.07903927

Vendeen	iHS	GO:0030209	dermatan sulfate catabolic process	HEXA	0.07903927
Vendeen	iHS	GO:0030214	hyaluronan catabolic process	HEXA	0.08932564
Vendeen	iHS	GO:0032324	molybdopterin cofactor biosynthetic process	MOCS1	0.09731561
Vendeen	iHS	GO:0032509	endosome transport via multivesicular body sorting pathway	VTA1	0.09611090
Vendeen	iHS	GO:0032511	late endosome to vacuole transport via multivesicular body sorting pathway	VTA1	0.07903927
Vendeen	iHS	GO:0032570	response to progesterone	TGFB2	0.09088807
Vendeen	iHS	GO:0032787	monocarboxylic acid metabolic process	ALDOB, KYNU, HEXA	0.09088807
Vendeen	iHS	GO:0032872	regulation of stress-activated MAPK cascade	TGFB2	0.09611090
Vendeen	iHS	GO:0032874	positive regulation of stress-activated MAPK cascade	TGFB2	0.08932564
Vendeen	iHS	GO:0032906	transforming growth factor beta2 production	TGFB2	0.08932564
Vendeen	iHS	GO:0032909	regulation of transforming growth factor beta2 production	TGFB2	0.08932564
Vendeen	iHS	GO:0033273	response to vitamin	KYNU	0.09088807
Vendeen	iHS	GO:0033554	cellular response to stress	MUTYH, TGFB2, FTO	0.09765588
Vendeen	iHS	GO:0033627	cell adhesion mediated by integrin	TGFB2	0.08932564
Vendeen	iHS	GO:0033628	regulation of cell adhesion mediated by integrin	TGFB2	0.07903927
Vendeen	iHS	GO:0033630	positive regulation of cell adhesion mediated by integrin	TGFB2	0.07903927
Vendeen	iHS	GO:0034341	response to type II interferon	KYNU	0.09611090
Vendeen	iHS	GO:0034354	'de novo' NAD biosynthetic process from tryptophan	KYNU	0.09088807
Vendeen	iHS	GO:0034472	snRNA 3'-end processing	TOE1	0.09611090
Vendeen	iHS	GO:0034516	response to vitamin B6	KYNU	0.07903927
Vendeen	iHS	GO:0034627	'de novo' NAD biosynthetic process	KYNU	0.09088807

Vendeen	iHS	GO:0035051	cardiocyte differentiation	<i>TGFB2</i>	0.09611090
Vendeen	iHS	GO:0035513	oxidative RNA demethylation	<i>FTO</i>	0.08932564
Vendeen	iHS	GO:0035552	oxidative single-stranded DNA demethylation	<i>FTO</i>	0.08932564
Vendeen	iHS	GO:0035553	oxidative single-stranded RNA demethylation	<i>FTO</i>	0.08932564
Vendeen	iHS	GO:0040008	regulation of growth	<i>TGFB2 , FTO</i>	0.09611090
Vendeen	iHS	GO:0042182	ketone catabolic process	<i>KYNU</i>	0.09731561
Vendeen	iHS	GO:0042245	RNA repair	<i>FTO</i>	0.08932564
Vendeen	iHS	GO:0042634	regulation of hair cycle	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0042637	catagen	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0043062	extracellular structure organization	<i>TGFB2 , ADAMTS3</i>	0.09088807
Vendeen	iHS	GO:0043420	anthranilate metabolic process	<i>KYNU</i>	0.08932564
Vendeen	iHS	GO:0043436	oxoacid metabolic process	<i>ALDOB, HPDL, KYNU, HEXA</i>	0.09088807
Vendeen	iHS	GO:0043523	regulation of neuron apoptotic process	<i>TGFB2</i>	0.09731561
Vendeen	iHS	GO:0043525	positive regulation of neuron apoptotic processes	<i>TGFB2</i>	0.08932564
Vendeen	iHS	GO:0043545	molybdopterin cofactor metabolic process	<i>MOCS1</i>	0.09731561
Vendeen	iHS	GO:0043650	dicarboxylic acid biosynthetic process	<i>KYNU</i>	0.09731561
Vendeen	iHS	GO:0044848	biological phase	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0044851	hair cycle phase	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0045112	integrin biosynthetic process	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0045113	regulation of integrin biosynthetic process	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0045229	external encapsulating structure organization	<i>TGFB2 , ADAMTS3</i>	0.09088807
Vendeen	iHS	GO:0045324	late endosome to vacuole transport	<i>VTA1</i>	0.09088807
Vendeen	iHS	GO:0045726	positive regulation of integrin biosynthetic process	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0045823	positive regulation of heart contraction	<i>TGFB2</i>	0.09611090
Vendeen	iHS	GO:0046373	L-arabinose metabolic process	<i>OTOGL</i>	0.08932564

Vendeen	iHS	GO:0046395	carboxylic acid catabolic process	<i>KYNU, HEXA</i>	0.09731561
Vendeen	iHS	GO:0046479	glycosphingolipid catabolic process	<i>HEXA</i>	0.09611090
Vendeen	iHS	GO:0046496	nicotinamide nucleotide metabolic process	<i>ALDOB, KYNU</i>	0.09611090
Vendeen	iHS	GO:0046514	ceramide catabolic process	<i>HEXA</i>	0.09731561
Vendeen	iHS	GO:0046874	quinolinate metabolic process	<i>KYNU</i>	0.09088807
Vendeen	iHS	GO:0048566	embryonic digestive tract development	<i>TGFB2</i>	0.09611090
Vendeen	iHS	GO:0048589	developmental growth	<i>TGFB2 , FTO</i>	0.09611090
Vendeen	iHS	GO:0048818	positive regulation of hair follicle maturation	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0048819	regulation of hair follicle maturation	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0048820	hair follicle maturation	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0050655	dermatan sulfate proteoglycan metabolic process	<i>HEXA</i>	0.07903927
Vendeen	iHS	GO:0050714	positive regulation of protein secretion	<i>TGFB2</i>	0.09731561
Vendeen	iHS	GO:0050884	neuromuscular process controlling posture	<i>HEXA</i>	0.07903927
Vendeen	iHS	GO:0050885	neuromuscular process controlling balance	<i>HEXA</i>	0.09611090
Vendeen	iHS	GO:0051189	prosthetic group metabolic process	<i>MOCS1</i>	0.09731561
Vendeen	iHS	GO:0051403	stress-activated MAPK cascade	<i>TGFB2</i>	0.09611090
Vendeen	iHS	GO:0051794	regulation of timing of catagen	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0051795	positive regulation of timing of catagen	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0051797	regulation of hair follicle development	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0051798	positive regulation of hair follicle development	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0051890	regulation of cardioblast differentiation	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0051891	positive regulation of cardioblast differentiation	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0055017	cardiac muscle tissue growth	<i>TGFB2</i>	0.09088807
Vendeen	iHS	GO:0060038	cardiac muscle cell proliferation	<i>TGFB2</i>	0.09088807
Vendeen	iHS	GO:0060317	cardiac epithelial to mesenchymal transition	<i>TGFB2</i>	0.08932564
Vendeen	iHS	GO:0060395	SMAD protein signal transduction	<i>TGFB2 , HEXA</i>	0.07903927
Vendeen	iHS	GO:0060419	heart growth	<i>TGFB2</i>	0.09088807

Vendeen	iHS	GO:0061082	myeloid leukocyte cytokine production	<i>TGFB2</i>	0.09731561
Vendeen	iHS	GO:0070304	positive regulation of stress-activated protein kinase signaling cascade	<i>TGFB2</i>	0.09088807
Vendeen	iHS	GO:0070989	oxidative demethylation	<i>FTO</i>	0.08932564
Vendeen	iHS	GO:0071604	transforming growth factor beta production	<i>TGFB2</i>	0.09088807
Vendeen	iHS	GO:0071634	regulation of transforming growth factor beta production	<i>TGFB2</i>	0.08932564
Vendeen	iHS	GO:0072524	pyridine-containing compound metabolic process	<i>ALDOB, KYNU</i>	0.09731561
Vendeen	iHS	GO:0090659	walking behavior	<i>HEXA</i>	0.09611090
Vendeen	iHS	GO:0097052	L-kynurenine metabolic process	<i>KYNU</i>	0.08932564
Vendeen	iHS	GO:0097053	L-kynurenine catabolic process	<i>KYNU</i>	0.08932564
Vendeen	iHS	GO:0170044	non-proteinogenic amino acid catabolic process	<i>KYNU</i>	0.09611090
Vendeen	iHS	GO:1901564	organonitrogen compound metabolic process	<i>MOCS1, TESK2, KHDRBS3, CWC27, CARS2, ALDOB, TUSC3, HPDL, KYNU, ADAMTS3, CPEB3, DPP8, HEXA, PRKG2, TMPRSS7, CNPPD1, STK16</i>	0.08932564
Vendeen	iHS	GO:1903524	positive regulation of blood circulation	<i>TGFB2</i>	0.09611090
Vendeen	iHS	GO:1905207	regulation of cardiocyte differentiation	<i>TGFB2</i>	0.08932564
Vendeen	iHS	GO:1905209	positive regulation of cardiocyte differentiation	<i>TGFB2</i>	0.08932564
Vendeen	iHS	GO:2000736	regulation of stem cell differentiation	<i>TGFB2</i>	0.09088807
Vendeen	iHS	GO:2000738	positive regulation of stem cell differentiation	<i>TGFB2</i>	0.07903927
Vendeen	iHS	GO:0005737	cytoplasm	<i>VTA1, TOE1, MRPL50, TUSC3, KYNU, RAB3GAP1, UCP1, FTO, HEXA, ABCB6, TUBA4A, LOC101116286, SPATA16</i>	0.09187738
Vendeen	iHS	GO:0005766	primary lysosome	<i>HEXA</i>	0.06561107

Vendeen	iHS	GO:0019008	molybdopterin synthase complex	<i>MOCS1</i>	0.06561107
Vendeen	iHS	GO:0033162	melanosome membrane	<i>ABCB6</i>	0.06561107
Vendeen	iHS	GO:0042582	azurophil granule	<i>HEXA</i>	0.06561107
Vendeen	iHS	GO:0045009	chitosome	<i>ABCB6</i>	0.06561107
Vendeen	iHS	GO:0090741	pigment granule membrane	<i>ABCB6</i>	0.06561107
Vendeen	iHS	GO:1905379	beta-N-acetylhexosaminidase complex	<i>HEXA</i>	0.06561107
Vendeen	iHS	GO:0000700	mismatch base pair DNA N-glycosylase activity	<i>MUTYH</i>	0.07274285
Vendeen	iHS	GO:0000701	purine-specific mismatch base pair DNA N-glycosylase activity	<i>MUTYH</i>	0.05654722
Vendeen	iHS	GO:0003726	double-stranded RNA adenosine deaminase activity	<i>ADAR</i>	0.06585137
Vendeen	iHS	GO:0003824	catalytic activity	<i>MOCS1, MUTYH, TOE1, TESK2, ADAR, CWC27, CARS2, RAB3C, ALDOB, HPDL, KYNU, ADAMTS3, OTOGL, FTO, DPP8, HEXA, PRKG2, TMPRSS7, ABCB6, GLB1L, STK16, TUBA4A, LOC101116286, PYGL</i>	0.07274285
Vendeen	iHS	GO:0003868	4-hydroxyphenylpyruvate dioxygenase activity	<i>HPDL</i>	0.06585137
Vendeen	iHS	GO:0004332	fructose-bisphosphate aldolase activity	<i>ALDOB</i>	0.07274285
Vendeen	iHS	GO:0004553	hydrolase activity, hydrolyzing O-glycosyl compounds	<i>OTOGL, HEXA, GLB1L</i>	0.06415325
Vendeen	iHS	GO:0004563	beta-N-acetylhexosaminidase activity	<i>HEXA</i>	0.08075259
Vendeen	iHS	GO:0004565	beta-galactosidase activity	<i>GLB1L</i>	0.08732262
Vendeen	iHS	GO:0004645	1, 4-alpha-oligoglucan phosphorylase activity	<i>PYGL</i>	0.07274285
Vendeen	iHS	GO:0004690	cyclic nucleotide-dependent protein kinase activity	<i>PRKG2</i>	0.08075259

Vendeen	iHS	GO:0004692	cGMP-dependent protein kinase activity	<i>PRKG2</i>	0.06585137
Vendeen	iHS	GO:0004817	cysteine-tRNA ligase activity	<i>CARS2</i>	0.05654722
Vendeen	iHS	GO:0005114	type II transforming growth factor beta receptor binding	<i>TGFB2</i>	0.07274285
Vendeen	iHS	GO:0005200	structural constituent of cytoskeleton	<i>TUBA4A, LOC101116286</i>	0.06415325
Vendeen	iHS	GO:0008184	glycogen phosphorylase activity	<i>PYGL</i>	0.07274285
Vendeen	iHS	GO:0015925	galactosidase activity	<i>GLB1L</i>	0.08732262
Vendeen	iHS	GO:0016286	small conductance calcium-activated potassium channel activity	<i>KCNN3</i>	0.08075259
Vendeen	iHS	GO:0016787	hydrolase activity	<i>MUTYH, TOE1, ADAR, RAB3C, KYNU, ADAMTS3, OTOGL, DPP8, HEXA, TMPRSS7, ABCB6, GLB1L, TUBA4A, LOC101116286</i>	0.05654722
Vendeen	iHS	GO:0016798	hydrolase activity, acting on glycosyl bonds	<i>MUTYH, OTOGL, HEXA, GLB1L</i>	0.05654722
Vendeen	iHS	GO:0016822	hydrolase activity, acting on acid carbon-carbon bonds	<i>KYNU</i>	0.06585137
Vendeen	iHS	GO:0016823	hydrolase activity, acting on acid carbon-carbon bonds, in ketonic substances	<i>KYNU</i>	0.06585137
Vendeen	iHS	GO:0016830	carbon-carbon lyase activity	<i>MOCS1, ALDOB</i>	0.07170098
Vendeen	iHS	GO:0030170	pyridoxal phosphate binding	<i>KYNU, PYGL</i>	0.07794993
Vendeen	iHS	GO:0030429	kynureninase activity	<i>KYNU</i>	0.05654722
Vendeen	iHS	GO:0033218	amide binding	<i>TGFB2</i>	0.07081195
Vendeen	iHS	GO:0034714	type III transforming growth factor beta receptor binding	<i>TGFB2</i>	0.06585137
Vendeen	iHS	GO:0035514	DNA demethylase activity	<i>FTO</i>	0.05654722
Vendeen	iHS	GO:0035515	oxidative RNA demethylase activity	<i>FTO</i>	0.06585137
Vendeen	iHS	GO:0035516	broad specificity oxidative DNA demethylase activity	<i>FTO</i>	0.05654722
Vendeen	iHS	GO:0043168	anion binding	<i>MOCS1, TESK2, CARS2, RAB3C, KYNU, PRKG2, ABCB6, STK16, TUBA4A, LOC101116286, PYGL</i>	0.07794993

Vendeen	iHS	GO:0046556	alpha-L-arabinofuranosidase activity	<i>OTOGL</i>	0.06585137
Vendeen	iHS	GO:0051213	dioxygenase activity	<i>HPDL, FTO</i>	0.08732262
Vendeen	iHS	GO:0051536	iron-sulfur cluster binding	<i>MOCS1, MUTYH</i>	0.08699674
Vendeen	iHS	GO:0051539	4 iron, 4 sulfur cluster binding	<i>MOCS1, MUTYH</i>	0.05654722
Vendeen	iHS	GO:0051540	metal cluster binding	<i>MOCS1, MUTYH</i>	0.08699674
Vendeen	iHS	GO:0061798	GTP 3', 8'-cyclase activity	<i>MOCS1</i>	0.05654722
Vendeen	iHS	GO:0061799	cyclic pyranopterin monophosphate synthase activity	<i>MOCS1</i>	0.05654722
Vendeen	iHS	GO:0061981	3-hydroxykynureninase activity	<i>KYNU</i>	0.05654722
Vendeen	iHS	GO:0070279	vitamin B6 binding	<i>KYNU, PYGL</i>	0.07794993
Vendeen	iHS	GO:0102148	N-acetyl-beta-D-galactosaminidase activity	<i>HEXA</i>	0.07274285
Vendeen	iHS	GO:0102250	linear malto-oligosaccharide phosphorylase activity	<i>PYGL</i>	0.05654722
Vendeen	iHS	GO:0102499	SHG alpha-glucan phosphorylase activity	<i>PYGL</i>	0.05654722
Vendeen	iHS	GO:1901363	heterocyclic compound binding	<i>MOCS1, TESK2, CARS2, RAB3C, KYNU, PRKG2, ABCB6, STK16, TUBA4A, LOC101116286, PYGL</i>	0.08237121
Vendeen	iHS	GO:1990931	mRNA N6-methyladenosine dioxygenase activity	<i>FTO</i>	0.05654722
Belclare	Tajimas'D	GO:0030054	cell junction	<i>UTRN, GRIA4, LOC101108995, GJC2, CLSTN1, GABRA5, CHRNA4, MYO1E</i>	0.03026655
Belclare	Tajimas'D	GO:0045211	postsynaptic membrane	<i>UTRN, GRIA4, CLSTN1, GABRA5, CHRNA4</i>	0.00789470
Belclare	Tajimas'D	GO:0097060	synaptic membrane	<i>UTRN, GRIA4, CLSTN1, GABRA5, CHRNA4</i>	0.00789470
Belclare	Tajimas'D	GO:0098794	postsynapse	<i>UTRN, GRIA4, CLSTN1, GABRA5, CHRNA4</i>	0.01372524
Charollais	Tajimas'D	GO:0001664	G protein-coupled receptor binding	<i>LOC101114285, LOC101114535, LOC101111035, LOC101111303</i>	0.06522845

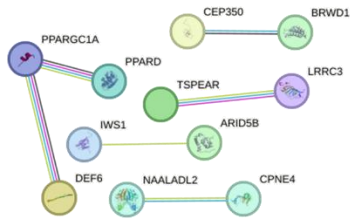
Charollais Tajimas'D	GO:0003688	DNA replication origin binding	<i>MCM5</i>	0.07353021
Charollais Tajimas'D	GO:0004122	cystathionine beta-synthase activity	<i>CBS</i>	0.07353021
Charollais Tajimas'D	GO:0004748	ribonucleoside-diphosphate reductase activity, thioredoxin disulfide as acceptor	<i>RRM1</i>	0.07353021
Charollais Tajimas'D	GO:0004876	complement component C3a receptor activity	<i>C3AR1</i>	0.07353021
Charollais Tajimas'D	GO:0005125	cytokine activity	<i>LOC101114285, LOC101114535, NAMPT, LOC101111035, LOC101111303</i>	0.03227562
Charollais Tajimas'D	GO:0008009	chemokine activity	<i>LOC101114285, LOC101114535, LOC101111035, LOC101111303</i>	0.02693455
Charollais Tajimas'D	GO:0008569	minus-end-directed microtubule motor activity	<i>DNAH3, DNHD1</i>	0.07353021
Charollais Tajimas'D	GO:0015186	L- glutamine transmembrane transporter activity	<i>SLC38A6</i>	0.07353021
Charollais Tajimas'D	GO:0030545	signaling receptor regulator activity	<i>LOC101114285, LOC101114535, NAMPT, LOC101111035, LOC101111303, NPFF</i>	0.07353021
Charollais Tajimas'D	GO:0030546	signaling receptor activator activity	<i>LOC101114285, LOC101114535, NAMPT, LOC101111035, LOC101111303, NPFF</i>	0.07353021
Charollais Tajimas'D	GO:0042379	chemokine receptor binding	<i>LOC101114285, LOC101114535, LOC101111035, LOC101111303</i>	0.02693455
Charollais Tajimas'D	GO:0045505	dynein intermediate chain binding	<i>DNAH3, DNHD1</i>	0.07353021
Charollais Tajimas'D	GO:0047280	nicotinamide phosphoribosyltransferase activity	<i>NAMPT</i>	0.07353021

Charollais	Tajimas'D	GO:0048018	receptor ligand activity	<i>LOC101114285, LOC101114535, NAMPT, LOC101111035, LOC101111303, NPFF</i>	0.07353021
Charollais	Tajimas'D	GO:0051959	dynein light intermediate chain binding	<i>DNAH3, DNHD1</i>	0.07353021
Charollais	Tajimas'D	GO:0052906	tRNA (guanine(37)-N1)-methyltransferase activity	<i>TRMT5</i>	0.07353021
Charollais	Tajimas'D	GO:0061731	ribonucleoside-diphosphate reductase activity	<i>RRM1</i>	0.07353021
Charollais	Tajimas'D	GO:0086080	protein binding involved in heterotypic cell-cell adhesion	<i>GLDN</i>	0.07353021
Charollais	Tajimas'D	GO:0140677	molecular function activator activity	<i>CHN1, PSME4, LOC101114285, LOC101114535, NAMPT, LOC101111035, LOC101111303, NPFF, MNAT1</i>	0.05069339
Suffolk	Tajimas'D	GO:0004525	ribonuclease III activity	<i>DROSHA , DICER1</i>	0.05364022
Suffolk	Tajimas'D	GO:0032296	double-stranded RNA-specific ribonuclease activity	<i>DROSHA , DICER1</i>	0.05364022
Texel	Tajimas'D	GO:0003923	GPI-anchor transamidase activity	<i>PIGK</i>	0.09905843
Texel	Tajimas'D	GO:0004310	farnesyl-diphosphate farnesyltransferase activity	<i>FDFT1</i>	0.09905843
Texel	Tajimas'D	GO:0004699	diacylglycerol-dependent, calcium-independent serine/threonine kinase activity	<i>PRKCE</i>	0.09905843
Texel	Tajimas'D	GO:0004953	icosanoid receptor activity	<i>ENSOARG00000012024, ENSOARG00000020714</i>	0.09905843
Texel	Tajimas'D	GO:0004954	prostanoid receptor activity	<i>ENSOARG00000012024, ENSOARG00000020714</i>	0.06743071
Texel	Tajimas'D	GO:0004955	prostaglandin receptor activity	<i>ENSOARG00000012024, ENSOARG00000020714</i>	0.06743071
Texel	Tajimas'D	GO:0004956	prostaglandin D receptor activity	<i>ENSOARG00000020714</i>	0.09905843
Texel	Tajimas'D	GO:0008609	alkylglycerone-phosphate synthase activity	<i>AGPS</i>	0.09905843

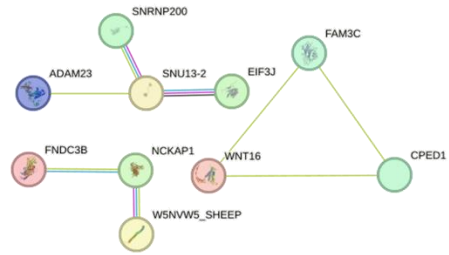
Texel	Tajimas'D	GO:0017134	fibroblast growth factor binding	<i>CEP57</i>	0.09905843
Texel	Tajimas'D	GO:0018738	S-formylglutathione hydrolase activity	<i>ESD</i>	0.09905843
Texel	Tajimas'D	GO:0030246	carbohydrate binding	<i>EGLN3 , SELL, SELE, P3H2</i>	0.09905843
Texel	Tajimas'D	GO:0031418	L-ascorbic acid binding	<i>EGLN3 , P3H2</i>	0.09905843
Texel	Tajimas'D	GO:0051996	squalene synthase activity	<i>FDFT1</i>	0.09905843
Texel	Tajimas'D	GO:0140789	histone phosphatase activity	<i>EYA1</i>	0.09905843
Texel	Tajimas'D	GO:0140793	histone H2AXY142 phosphatase activity	<i>EYA1</i>	0.09905843

Breed	Method	ID	Term	Gene_name	FDR
Vendeen	iHS	KEGG:00513	Various types of N-glycan biosynthesis	<i>TUSC3,MGAT4D,HEXA</i>	0.03232139
Vendeen	iHS	KEGG:04540	Gap junction	<i>PRKG2, TUBA4A, LOC101116286</i>	0.09659132
Charollais	Tajimas'D	KEGG:04061	Viral protein interaction with cytokine and cyto kine receptor	<i>LOC101114285, LOC101114535, LOC101111035, LOC101111303</i>	0.05003824
Charollais	Tajimas'D	KEGG:04620	Toll-like receptor signaling pathway	<i>LOC101114285, LOC101114535, LOC101111035, LOC101111303</i>	0.05434723
Charollais	Tajimas'D	KEGG:05323	Rheumatoid arthritis	<i>LOC101114535, LOC101111035, LOC101111303, ATP6V1C2</i>	0.05003824
Texel	Tajimas'D	KEGG:04932	Non-alcoholic fatty liver disease	<i>MAP3K5, LOC101111101, LEPR, NFKB1, ADIPOR1, ADIPOQ</i>	0.04668962
Texel	Tajimas'D	KEGG:05410	Hypertrophic cardiomyopathy	<i>SGCD , ITGA7, CACNA2D3, ITGA4, TTN</i>	0.04668962
Texel	Tajimas'D	KEGG:05414	Dilated cardiomyopathy	<i>SGCD , ITGA7, CACNA2D3, ITGA4, TTN</i>	0.04668962

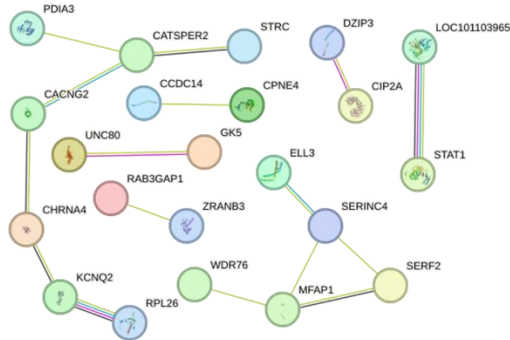
Belclare



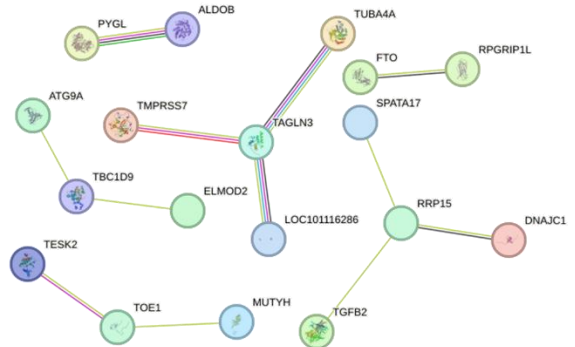
Charollais



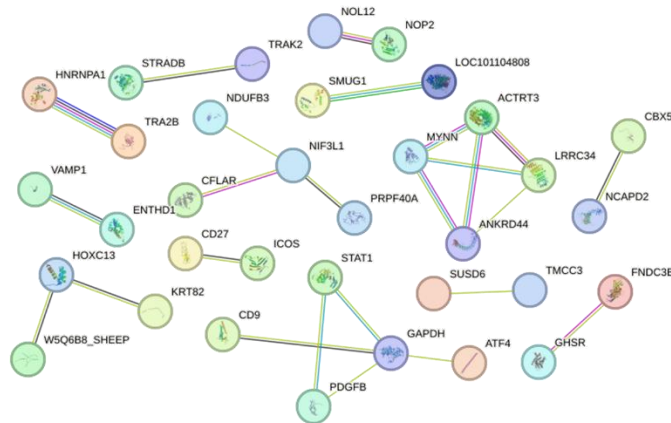
Suffolk



Vendéen

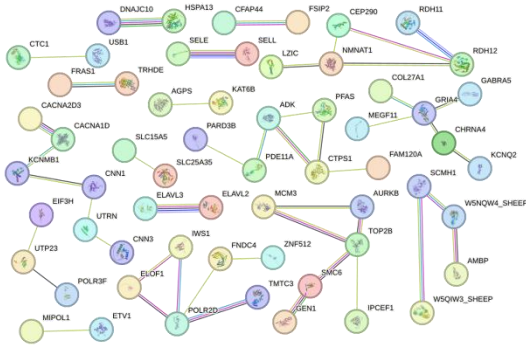


Texel

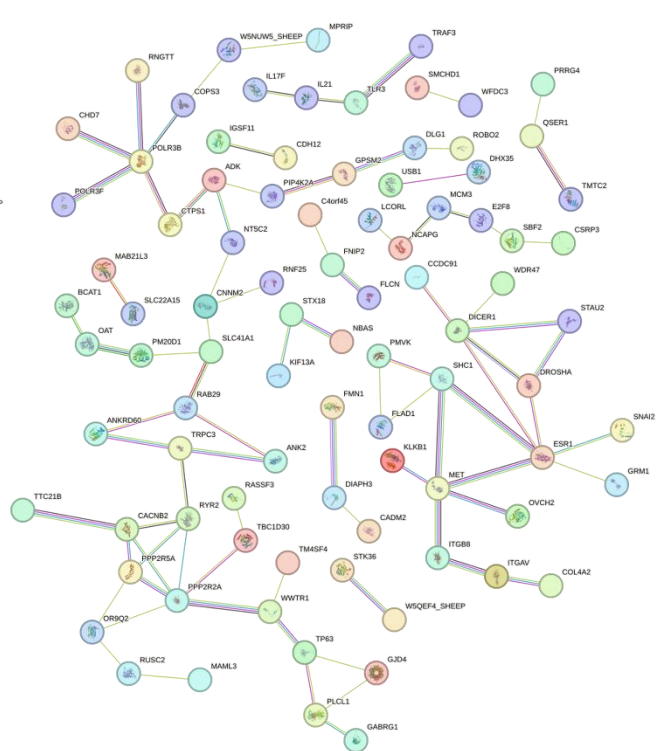


Supplementary Figure S3. Network analysis of genes detected by iHS for five sheep populations.

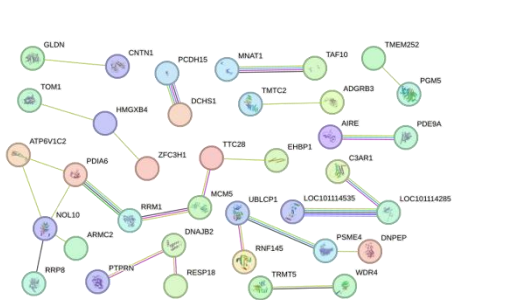
Belclare



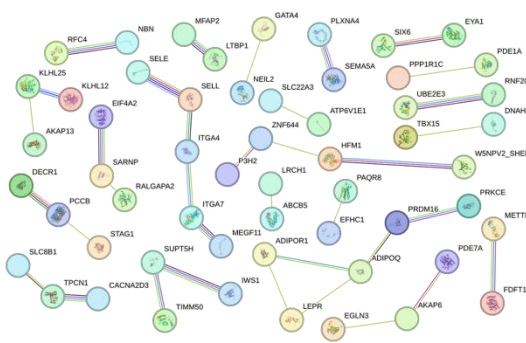
Suffolk



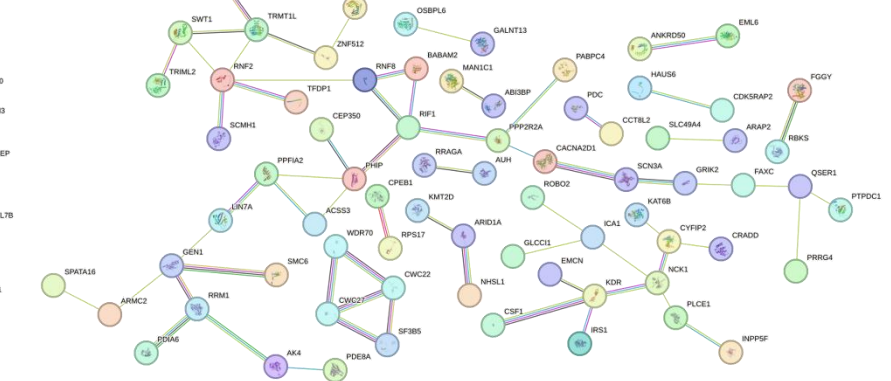
Charollais



Texel



Vendéen



Supplementary Figure S4. Network analysis of genes detected by Tajima's D for five sheep populations.