

Weatherbys Scientific Sheep Genotyping: illumina® OvineSNP50 Genotyping BeadChip v2

51,960 SNP coverage of the Ovine genome including scrapie

Introduction

Weatherbys Scientific have collaborated with illumina® to validate and release the new Illumina® OvineSNP50 Genotyping BeadChip v2. This new SNP chip has been validated using 16 different sheep breeds from 410 animals. Scrapie Genotyping is now possible on this SNP chip via a subset of 4 specific scrapie probes that have demonstrated 100% concordance with control samples.



Compatible with your existing Ovine SNP data sets

Adopting the Illumina® OvineSNP50 Genotyping BeadChip v2 is risk free. Our analysis has demonstrated backward compatibility to the Illumina OvineSNP50 v1 chip, with genotype concordance of >99.9% between versions. Furthermore a reproducibility rate of >99.9% across all 51,960 SNPs ensures consistent integrity of genotypes generated when using Illumina® OvineSNP50 Genotyping BeadChip v2.

Scrapie Genotyping

Illumina's OvineSNP50 Genotyping BeadChip v2 content includes Scrapie genotyping capabilities via a subset of 4 specific probes targeting PRNP nucleotide positions 407 (codon 136), 461 (codon 154), 512 (codon 171) and 513 (codon 171) – according to GenBank reference sequence AJ223072. An Inter Laboratory Comparison Test of Scrapie genotypes performed across 28 control samples with known Scrapie genotypes, demonstrated a 100% concordance in determining Scrapie genotypes when using OvineSNP50 Genotyping BeadChip v2.

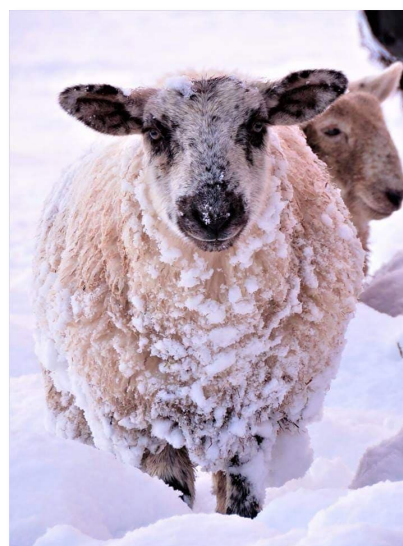


Photo credit: © Karin Miller

Technical Specifications

Species:	Ovine
Manufacturer:	Illumina / Co-validated with Weatherbys Scientific
Chemistry:	XT
Chip Format:	96 sample format
Illumina Based SNP Content:	51,960
Content Overlap - Ovine v1 and Ovine v2:	51,953

Minor Allele Frequency (MAF) across breeds:

MAF was determined using 410 animals across 16 different breeds, with sample numbers per breed ranging from 2 to 66 (Table 1).

Table 1: Minor allele frequencies across a total of 16 Ovine breeds for 51,960 SNP content. Number of SNPs with a minor allele frequency greater than ≥ 0.05 and ≥ 0.25 respectively.

Breed	Samples	Average MAF	MAF ≥ 0.05 ^a	MAF ≥ 0.25 ^b
Belclare	58	0.2491	44977	27169
Beltex	51	0.2365	42764	25059
Charollais	31	0.2617	46153	28358
NZ Suffolk	38	0.2416	44142	26407
NZ Texel	44	0.2532	45247	27685
Border Leicester	8	0.1567	31658	18102
Easy Care	8	0.2238	42942	26318
Hampshire Down	6	0.2315	42758	28278
Highlander	6	0.2524	44898	31377
Mayo Connemara	5	0.2562	44960	28136
Primera	4	0.2202	39191	28550
Shropshire	2	0.1984	30706	30706
Suffolk	66	0.2277	41960	24249
Swaledale	11	0.2361	41911	25198
Texel	26	0.2425	44192	26699
Vendeen	46	0.2345	42821	25306
Overall/Average	410	0.2326	41955	26724.8

Chromosomal Coverage of 51,960 SNPs

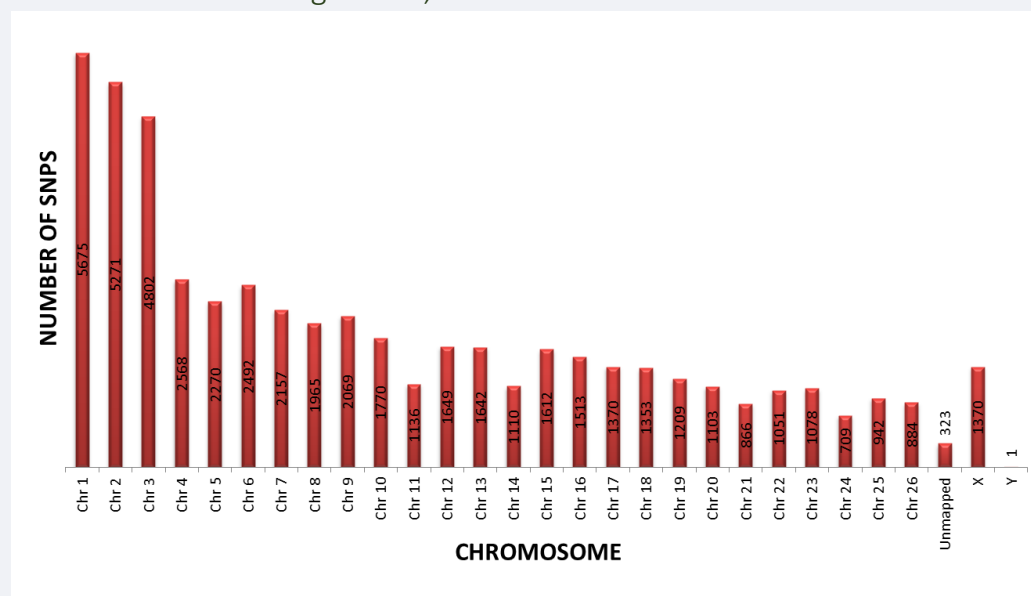


Figure 1: Chromosomal coverage of the 51,960 SNPs across the 26 autosomal chromosomes and 2 sex chromosomes, including unmapped SNPs.