PAG XXVI
ISGC meeting Monday 15th January 2018

Welcome and updates
ISGC Genomic tools

1995-2001
• Microsatellite-based linkage maps produced through genotyping of the International Mapping Flock

2002
• CHORI-243 BAC library and BAC end sequencing

2006
• Virtual Sheep Genome released

2006-2009
• INRA 1200-rad RH Panel and genome maps
• USDA 5000-rad RH Panel and genome maps

2007
• Sanger re-sequencing of 2700 loci, 6021 SNPs
• 1536 SNP chip developed

2007-2008
• Illumina GA sequence (0.8 x) and Roche 454 sequence (3 x) derived from six breeds
• Ovine SNP50 BeadChip

2009
• Ovine HapMap based on 50k SNP chip

2010-2013
• SNP loci for Parentage
• Resequencing of sheep breed diversity panel and HD SNP chip development (606K SNPs)
• Sheep Genome Assembly OARv3.1 (published in Science 2014)

2015
• Sheep Genome Assembly OARv4.0
• Low density (15K) SNP chip
• SheepGenomes Database (1000 genomes) project initiated

2017
• Ovine FAANG project initiated
• New genome assembly Oar_rambouillet_v1.0 (Baylor)
ISGC Illumina SNP chips

- Both the 50K and the 15K SNP chips are publicly available
- The HD (606K) chip currently remains an ISGC consortium chip

[Various low density ovine chips derived from the ISGC chips by individual groups (AgResearch, CSIRO, Teagasc) to aid genotyping efficacy for genomic selection ($) imputation)]
Illumina HD (606K) ISGC consortium chip

MAF bins of the “equal spacing” SNPs

MAF in NZ populations
HapMap animals_maf distribution 15K, 50K and HD chips

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<td>Grand Total</td>
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Where to next with genotyping tools?

- Research tools vs Industry tools
  - Discovery/association, validation, industry implementation....

- New (Country/group specific) low density/low cost chips in combination with current 50K and/or HD chips?
  **OR** International effort of a new tweaked version of the 15K but aim to get better price point?

- Build a new version of 50K chip eg ~40K from current chip with ~10K variants from HD association studies? Illumina XT 96 sample format?

- Appetite for another International co-ordinated purchase order for current HD SNP chip? Better price point.

- Imputation to whole genome sequence

- Genotyping by sequencing (HD equivalent; simultaneous discovery and genotyping)

- Methylation

- Ovine FAANG

Above just points to ponder!

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Informal follow up at the World Congress on Genetics Applied to Livestock Production, February 11th-16th 2018, Auckland, New Zealand