


# Genomic Selection in Livestock

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ANIMAL  
SCIENCE

Animal  
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&  
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## OUTLINE / TOPICS

- Introduction and motivation (Jack)
- Conventional prediction using pedigree relationships (Dorian)
- Models to predict single SNP effects (Dorian)
  - Fixed effect models
  - Fitting SNPs as random effects
- Bayesian methods (Rohan)
  - Bayes theorem
  - Gibbs sampler vs Metropolis Hastings
- Genomic prediction (Dorian)
  - An equivalent (animal) model for genomic prediction
  - Some alternative computing strategies that are not equivalent models
- Bayesian methods applied to genomic prediction (Rohan)
  - Bayes A and B
  - Bayes C and G-BLUP
  - Bayes N
- Contributions to genomic predictions (Jack)
  - Linkage Disequilibrium
  - Genetic relationships
  - Linkage
- Application of genomic prediction models to real data (Dorian and Jack)
  - Training and validation
  - Within and across breed prediction
- GWAS and finding QTL regions (Rohan and Dorian)
- Other genomic prediction methods (Rohan)
  - Bayes C $\pi$  and estimation of  $\pi$
  - Estimating the scale factor
  - Alternative distributions – Heavy-tailed vs. Normal distributions
- Imputation and using low-density panels (Jack)