**Design of breeding programs with genomic selection**

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Website: http://qtl.rocks/

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| **Day 1** | **Single trait selection** | **File** |
| Slides | Building Blocks of Quantitative Genetics  Improving selection accuracy, BLUP selection,  Selection theory 1: Change of mean  Selection Theory 2: Change of variance | Day1abuilding blocks.pdf  Day1bEBVacc.pdf  Day1cSelectionResp.pdf  Day1dChange Variance |
| Exercises | Exercises on EBV accuracy  Exercises on selection | Day1Exercises.pdf  STEBVaccuracy.xls, BLUPEBV.XLS  Selint.xls  truncsel.xls  Genetic\_gain.xls,  Bulmer.xls |
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| **Day 2** | **Multiple Trait Selection** |  |
| Slides | Multiple Trait Selection  Two-Stage Selection | Day2aMultiTrait.pdf  Day2b Multiple-stage selection.pdf |
| Exercises | MT selection Exercises | Day2Exercises.pdf  *mtindexm.xls*  *mtindexEllipse.xls*  *mtindexDesgains.xls* |

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| **Day 3** | **Design of breeding programs** |  |
| Slides | Design of Breeding programs – overview  Inbreeding  Optimal Contribution Selection  Optimizing Breeding Program Design  Economic Evaluation of breeding programs  Cost Benefit analysis in competitive markets | Day3a DesignofBP.pdf  Day3b Inbreeding.pdf  Day3c OCS.pdf  Day3d OptBP.pdf  Day3e EvaluationBP.pdf  Day3f Marketshare.pdf |
| Exercises | Exercises Breeding Programs | Day3Exercises.pdf  Truncsel.xlsm  xGxAx.xlsm  gflow.xlsx |
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| **Day 4** | **Using Genomic Information** |  |
| Slides | Accuracy of genomic prediction  GBVs in Genetic Evaluation  Genomic control of Inbreeding  Genomic selection in crossbreeding programs | Day4aAccuracyofGP.pdf  Day4b GS selection index.pdf  Day4c GenomicControlInbreeding.pdf  Day4d crossbreeding.pdf |
| Exercises | Accuracy of genomic predictions | Day4Exercises.pdf  *MBV Accuracy.xls*  STEBVaccuracy.xls  truncsel  Genetic\_gain.xls  *Gensel.xlsm*  Hmwk 2-3 Single trait GS.d1s  Day 4 Single trait GS.d1s  *MTGBV.xlsm* |

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| **Day 5** | **Breeding program designs to exploit GS** |  |
| slides | Cost-benefit of genomics in breeding programs  Design of reference populations  Use of low density SNP panels and imputation  Use of Genomic Selection in Dairy cattle  Use of Genomic Selection in Beef cattle  Use of Genomic Selection in Poultry  Use of Genomic Selection in Pigs  Use of Genomic Selection in Sheep | Day5a CostBenefitGS.pdf  Day5b DesignofRefPop.pdf  Day5h GSinSheep.pdf |