

**File S1**

**ASReml file for analysis piglet birth weight and survival**

!WORKSPACE 1800 !NOGRAPHICS !DEBUG !LOGFILE !RENAME !ARGS 1 2 // !DOPART \$1

DHGLM model of birth weight and survival

animal 32450 !!

litter 2129 !!

parity 10 !!

sex 2 !!

farm 15 !!

ys 22 !!

sow 7415 !!

bw !M -99

surv !M -99

Gval !=bw !-1.19 !\*V10

Ywt !=1. Gwt !=1. survW !=1.

Ainv.giv

phenotype3.txt !maxit 1000 !skip 1 !DOPART \$1

!PART 1 # normal model

bw ~ mu parity sex farm.ys !r giv(sow,1) litter

residual units

!Part 2

!ASUV !EXTRA 100 !SLOW

# in odd iterations, we use the predicted weights for the primary response

!IF ODD !CALC W1=EXP(R2-Y2) #redefine weights for Y1

!IF EVEN !CALC S1=1./W1; H0=MIN(H1/S1, .9999); Z2=MAX(R1\*R1,.0001)/(1-H0)

!IF EVEN !CALC Y2=LOG(S1)+(Z2-S1)/S1 #redefine Y2

!IF EVEN !CALC W2=(1-H0)/2 #redefine weights for Y2

!ASSIGN gen 0.016 0.005 0.05 0.00 0.00 5.0

!ASSIGN lit 0.015 0.0 0.08 0.0 0.0 5.0

bw Gval surv !Weight Ywt !WT Gwt !WT survW ~ Trait Trait.parity Trait.sex Trait.farm.yr !r us(Trait,\$gen).giv(sow,1)  
us(Trait,\$lit).litter !f mv

**Files S2-S3**

Available for download at <http://www.genetics.org/lookup/suppl/doi:10.1534/genetics.114.173070/-/DC1>

**File S2** Phenotypic data and the A-inverse

**File S3** Fortran programs