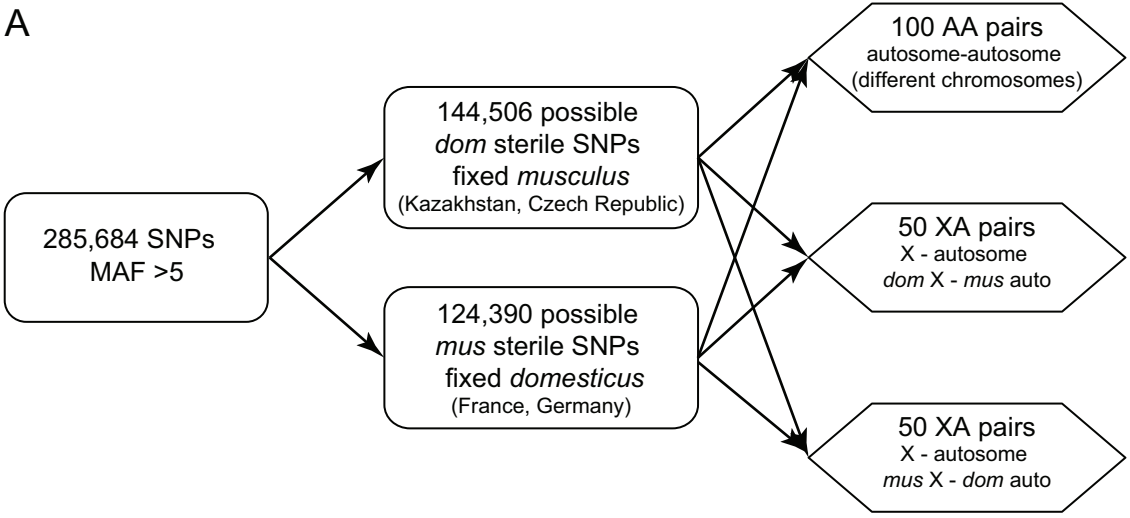
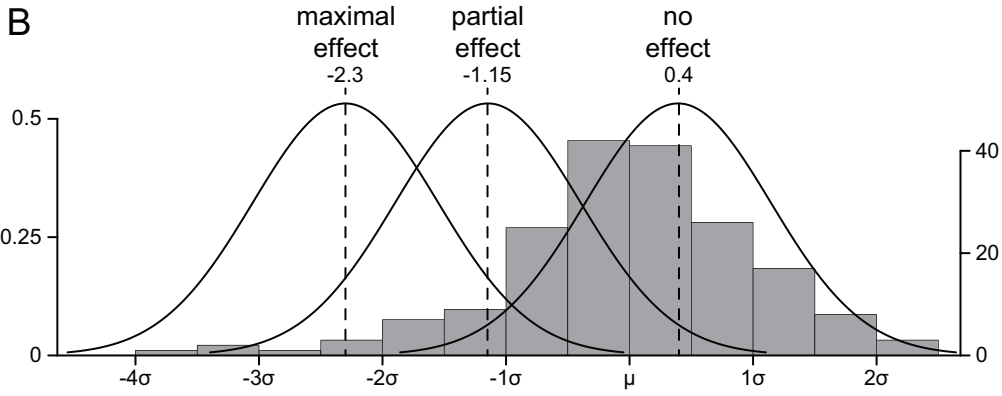
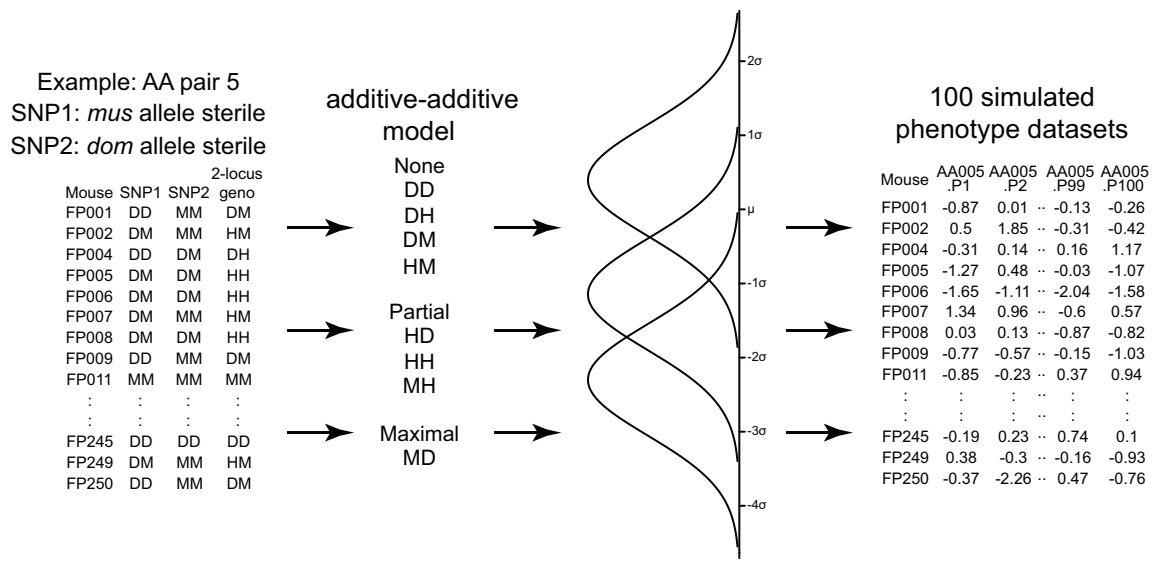
A


285,684 SNPs
MAF >5
144,506 possible
dom sterile SNPs
fixed musculus
(Kazakhstan, Czech Republic)
124,390 possible
mus sterile SNPs
fixed domesticus
(France, Germany)
100 AA pairs
autosome-autosome
(different chromosomes)
50 XA pairs
X - autosome
dom X - mus auto
50 XA pairs
X - autosome
mus X - dom auto

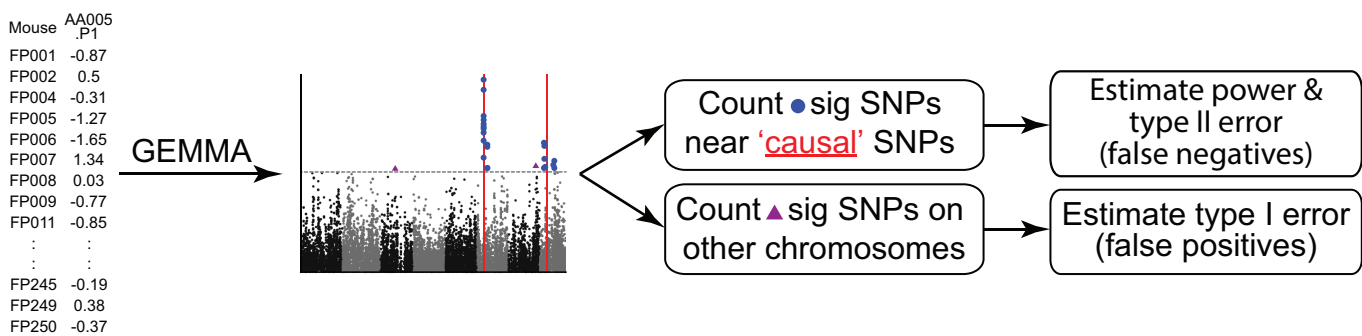
B


maximal
effect
-2.3
partial
effect
-1.15
no
effect
0.4
0.5
0.25
0
40
20
0
-4σ
-3σ
-2σ
-1σ
μ
1σ
2σ

C


Example: AA pair 5
SNP1: mus allele sterile
SNP2: dom allele sterile
Mouse SNP1 SNP2 2-locus geno
FP001 DD MM DM
FP002 DM MM HM
FP004 DD DM DH
FP005 DM DM HH
FP006 DM DM HH
FP007 DM MM HM
FP008 DM DM HH
FP009 DD MM DM
FP011 MM MM MM
FP245 DD DD DD
FP249 DM MM HM
FP250 DD MM DM
additive-additive model
None
DD
DH
DM
HM
Partial
HD
HH
MH
Maximal
MD
2σ
1σ
μ
-1σ
-2σ
-3σ
-4σ
100 simulated phenotype datasets
Mouse AA005 .P1 AA005 .P2 AA005 .P99 AA005 .P100
FP001 -0.87 0.01 -0.13 -0.26
FP002 0.5 1.85 -0.31 -0.42
FP004 -0.31 0.14 0.16 1.17
FP005 -1.27 0.48 -0.03 -1.07
FP006 -1.65 -1.11 -2.04 -1.58
FP007 1.34 0.96 -0.6 0.57
FP008 0.03 0.13 -0.87 -0.82
FP009 -0.77 -0.57 -0.15 -1.03
FP011 -0.85 -0.23 0.37 0.94
FP245 -0.19 0.23 0.74 0.1
FP249 0.38 -0.3 -0.16 -0.93
FP250 -0.37 -2.26 0.47 -0.76

D


Mouse AA005 .P1
FP001 -0.87
FP002 0.5
FP004 -0.31
FP005 -1.27
FP006 -1.65
FP007 1.34
FP008 0.03
FP009 -0.77
FP011 -0.85
FP245 -0.19
FP249 0.38
FP250 -0.37
GEMMA
Count ● sig SNPs near 'causal' SNPs
Count ▲ sig SNPs on other chromosomes
Estimate power & type II error (false negatives)
Estimate type I error (false positives)