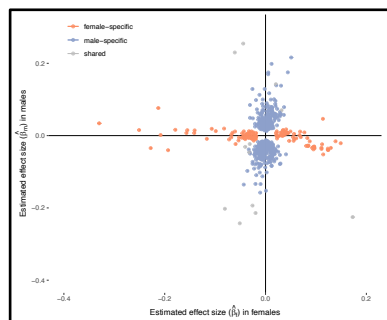


**Calculate
Summary Statistics**

variant	$\hat{\beta}_f$	SE_f^2	$\hat{\beta}_m$	SE_m^2
rs1223	2.3321	0.0090	1.2459	0.8866
rs1224	-0.1212	0.8866	-3.2334	0.1555
rs1225	0.1522	0.1555	4.2132	0.2324
rs1226	1.2459	0.2324	2.2869	0.2121
rs1227	0.1189	0.2121	0.1122	0.1189
...

M0 $\beta_f = 0, \beta_m = 0$ no effects
M1 $\beta_f, \beta_m \sim N(0, \Sigma)$ non-zero effects



**Estimate Heritability and
Genetic Correlation**

2-component
Sex-Effect Mixture Model
(SEMM)

M0 $\beta_f = 0, \beta_m = 0$ no effects
M1 $\beta_f = \beta, \beta_m = 0$ female-specific effects
M2 $\beta_f = 0, \beta_m = \beta$ male-specific effects
M3 $\beta_f = \beta_m = \beta$ shared effects

**Identify
Sex-specific Effects**
rs23408, rs451, ...
 4-component
SEMM