

**Table S1** Probability  $P(Y|Z, \epsilon)$  of the observed genotype  $Y$  given the true phased genotype  $Z$ , and the allelic typing error probability  $\epsilon$ . Dashes denote missing alleles in a sampled individual. In practice, genotypes  $1/-$  and  $2/-$  are rarely called from probe intensity data.

Observed genotype $Y$	True phased genotype $Z$			
	(1, 1)	(1, 2)	(2, 1)	(2, 2)
$-/-$	1	1	1	1
$1/-$	$1 - \epsilon$	$1/2$	$1/2$	$\epsilon$
$2/-$	$\epsilon$	$1/2$	$1/2$	$1 - \epsilon$
$1/1$	$(1 - \epsilon)^2$	$\epsilon(1 - \epsilon)$	$\epsilon(1 - \epsilon)$	$\epsilon^2$
$1/2$	$2\epsilon(1 - \epsilon)$	$\epsilon^2 + (1 - \epsilon)^2$	$\epsilon^2 + (1 - \epsilon)^2$	$2\epsilon(1 - \epsilon)$
$2/2$	$\epsilon^2$	$\epsilon(1 - \epsilon)$	$\epsilon(1 - \epsilon)$	$(1 - \epsilon)^2$