Figure S5: QQ-plot of $X_i^T X_i$ calculated in two different ways and the $\chi^2_{52}$ distribution, which is expected if $X_i$ would follow MVN(0, I). $X^T X$ was calculated in two different ways, first using the final generation of the MCMC ($X_i^{(M)}^T X_i^{(M)}$) and the second using the average $X_i^T X_i$ across all $M$ samples for each locus $l$ ($\bar{X}_i^T \bar{X}_i$). The estimates based on single samples from the MCMC show a somewhat higher variance. The averaging, on the other hand, led to a smaller variance, indicating that this approach is slightly over-conservative. Both observed distributions are not consistent with the expected $\chi^2_{52}$ distribution (Kolmogorov-Smirnov tests, both p-values $< 10^{-6}$). We chose to use $\bar{X}_i^T \bar{X}_i$, as it averages over our uncertainty in the sample frequencies, and so should be more robust to outliers due to small sample sizes.