

We note the following errors in the **Appendix**:

- (1) Gibbs update 1: \mathbf{F} should be defined as $\mathbf{F} = \mathbf{Z}\mathbf{F}_a + \mathbf{F}_r$, not $\mathbf{F} = \mathbf{F}_a + \mathbf{F}_r$
- (2) Gibbs update 1: \mathbf{C} and \mathbf{C}^* should be defined as: $\mathbf{C} = \psi_{r_j}^{-1}\mathbf{F}^T\mathbf{F} + \text{Diag}(\psi_{jl}^{-1}\tau_j^{-1})$ and $\mathbf{C}^* = \mathbf{F}^T(\psi_{r_j}\mathbf{I}_n + \psi_{a_j}\mathbf{Z}\mathbf{A}\mathbf{Z}^T)^{-1}\mathbf{F} + \text{Diag}(\psi_{jl}^{-1}\tau_j^{-1})$, for j fixed, and $l \in 1 \dots k^*$. The diagonalization of the inverse is thus:

$$(\psi_{r_j}\mathbf{I}_n + \psi_{a_j}\mathbf{Z}\mathbf{A}\mathbf{Z}^T)^{-1} = \mathbf{U} \text{Diag}(1/(\psi_{r_j} + \psi_{a_j}s_{ii}))\mathbf{U}^T$$

- (3) Gibbs update 4: $\mathbf{Z}\mathbf{F}_j$ should be replaced by $\mathbf{Z}^T\mathbf{F}_j$ in the expression for the full conditional, and $\mathbf{Z}\mathbf{Z}^T$ should be replaced by $\mathbf{Z}^T\mathbf{Z}$ in the expression for \mathbf{C}^* .
- (4) Gibbs update 8: The \mathbf{A}^{-1} term in the conditional posterior of the precision of the residual genetic effects of trait j was omitted. The conditional posterior should read:

$$\pi(\psi_{a_j}^{-1} \mid \mathbf{e}_{a_j}) \sim \text{Ga}\left(a_g + \frac{r}{2}, b_g + \frac{1}{2}\mathbf{e}_{a_j}^T \mathbf{A}^{-1}\mathbf{e}_{a_j}\right).$$

Of these errors, only item 4 was entered incorrectly in the MATLAB code used to perform all analyses in the manuscript. This omission had no effect on Figure 5 because in that analysis, $\mathbf{A} = \mathbf{I}_r$. However, in the simulation results, $\mathbf{A} \neq \mathbf{I}_r$, so the presented results could change slightly. We have re-run all analyses with corrected code. Figures produced using new simulations are very similar to those originally published, and no conclusions change.

We have uploaded an updated **Appendix**, updated versions of all figures, and corrected MATLAB code, to the website cited in the paper, as well as to the github archive: <https://github.com/deruncie/SparseFactorMixedModel>.