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CORRECTION

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# Correction: Theoretical accuracy for indirect predictions based on SNP effects from single-step GBLUP

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**Correction: *Genetics Selection Evolution* (2022) 54:66**  
<https://doi.org/10.1186/s12711-022-00752-4>

After publication of this work [1], we noticed that there was an error in Eqs. (14) to (19) presented on page 4 of the paper, where we refer to the term  $\text{var}(\hat{\mathbf{a}})$  as the

prediction error covariance (PEC) of SNP effects which is not correct.

The correct equations should be:

$$\text{var}(\hat{\mathbf{a}}) = \text{var}\left((1 - \alpha)b \frac{1}{2 \sum p_i(1 - p_i)} \mathbf{Z}' \mathbf{G}^{-1} \hat{\mathbf{u}}\right) \quad (14)$$

$$= (1 - \alpha)b \frac{1}{2 \sum p_i(1 - p_i)} \mathbf{Z}' \mathbf{G}^{-1} \text{var}(\hat{\mathbf{u}}) \left( (1 - \alpha)b \frac{1}{2 \sum p_i(1 - p_i)} \mathbf{Z}' \mathbf{G}^{-1} \right)' \quad (15)$$

$$= (1 - \alpha)b \frac{1}{2 \sum p_i(1 - p_i)} \mathbf{Z}' \mathbf{G}^{-1} (\text{var}(\mathbf{u}) - \text{var}(\hat{\mathbf{u}} - \mathbf{u})) \mathbf{G}^{-1} \mathbf{Z} \frac{1}{2 \sum p_i(1 - p_i)} b(1 - \alpha). \quad (16)$$

The original article can be found online at <https://doi.org/10.1186/s12711-022-00752-4>.

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Then,

$$\text{var}(\hat{\mathbf{a}}) = (1 - \alpha)b \frac{1}{2 \sum p_i(1 - p_i)} \mathbf{Z}' \mathbf{G}^{-1} (\mathbf{G} \sigma_u^2 - \mathbf{C}^{u_2 u_2}) \mathbf{G}^{-1} \mathbf{Z} \frac{1}{2 \sum p_i(1 - p_i)} b(1 - \alpha). \quad (17)$$

Therefore,

$$\text{var}(\hat{\mathbf{a}}) = (1 - \alpha)b \frac{1}{2 \sum p_i(1 - p_i)} (\mathbf{Z}' \mathbf{G}^{-1} \mathbf{Z} \sigma_u^2 - \mathbf{Z}' \mathbf{G}^{-1} \mathbf{C}^{u_2 u_2} \mathbf{G}^{-1} \mathbf{Z}) \frac{1}{2 \sum p_i(1 - p_i)} b(1 - \alpha). \quad (18)$$

$$\text{ACC}_{IP_j} = \sqrt{\frac{\mathbf{z}_j \text{var}(\hat{\mathbf{a}}) \mathbf{z}_j'}{\sigma_u^2}}. \quad (19)$$

Please note that the equations are correctly programmed in the software used for analyses, and the corrections above do not affect the end results presented in the manuscript.

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#### Reference

- Garcia A, Aguilar I, Legarra A, Tsuruta S, Misztal I, Lourenco D. Theoretical accuracy for indirect predictions based on SNP effects from single-step GBLUP. *Genet Sel Evol.* 2022;54:66. <https://doi.org/10.1186/s12711-022-00752-4>.

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