Corrigendum: Searching for the Mechanisms of Mammalian Cellular Aging Through Underlying Gene Regulatory Networks

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A Corrigendum on

Searching for the Mechanisms of Mammalian Cellular Aging Through Underlying Gene Regulatory Networks
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In the published article, there are various errors due to a mistake in the labels in Figure 2B. The labels for fast-aging and slow-aging are incorrect and should be exchanged. The corrected Figure 2 appears below.

Consequently, Figure 7A and Figure 7C should be exchanged. The corrected Figure 7 appears below.

In Figure 8A, the labels for fast-aging and slow-aging are incorrect and should be exchanged. The corrected Figure 8 appears below.

Also, there are spelling errors in 2.4. Global Sensitivity Analysis of Aging in Mammals, Paragraph 2. BHFS should be changed to BHSF and BHSI should be changed to BHSI. BHFI should be changed to BHFI and BHFS should be changed to BHFS.

Corrections have been made to 2.4. Global Sensitivity Analysis of Aging in Mammals, Paragraph 2:

We performed global sensitivity analysis on the basal expression level to quantifying the barrier height changes for every gene. The detailed results of the global sensitivity analysis are shown in Figure 5. For the barriers related to the slow-aging state, BHFS and BHSI, we can see that increasing the basal expression levels of the genes AMPK, FOXO, and Sestrins significantly enhances the stability of the slow-aging state. This indicates that it becomes harder for the system to escape from the slow-aging state. In contrast, gene AKT significantly decreases the stability of the slow-aging state. These results are consistent with previous experimental findings (Salminen and Kaarniranta, 2012; Lee et al., 2013; Gharibi et al., 2014; Martins et al., 2015). For the barrier heights related to the fast-aging state, BHFI and BHFS, we can clearly see that increasing the basal expression levels of the genes AMPK, SIRT1, and Sestrins significantly decreases the stability of the fast-aging state. AMPK and Sestrins play opposite roles in the slow-aging state, but the role of SIRT1 in slow-aging is not significant. For the intermediate state, the result is complex. Genes mTORC1 and p53 are only effective in the intermediate state, but not in the other two states. Although the existence of the intermediate state between fast-aging and slow-aging has not been
directly verified, this study shows that different genes seem to influence different attractors. This can provide new insight for research on mammalian cellular aging mechanisms.

The mistake in 2.4. Global Sensitivity Analysis of Aging in Mammals, Paragraph 3 is caused by the label mistake in Figure 2B. The word decreased, destabilize, stabilize and promote at the bottom of the paragraph should be corrected.

A correction has been made to 2.4. Global Sensitivity Analysis of Aging in Mammals, Paragraph 3:

We also performed global sensitivity analysis on regulatory strength $\omega_{ij}$. The bar charts shown in Figure 6 reflect $\Delta BH = BH_0$ vs. $\omega_{ij}$. The most sensitive regulation from the slow-aging state to the fast-aging state is SIRT1->AMPK, and the barrier height from the slow-aging state to the fast-aging state is increased with increasing SIRT1->AMPK. This means that increasing the activation regulation of SIRT1->AMPK will stabilize the slow-aging state and therefore delay the aging process. The most sensitive regulation of barrier height from the intermediate state to the slow-aging state is AKT->p53, and the barrier height from the intermediate state to the slow-aging state is increased with increasing AKT->p53. This means that increasing the inhibition regulation of AKT->p53 will stabilize the intermediate state and decrease the chance of slow aging, effectively promoting the aging process. The most sensitive regulation of barrier height from the slow-aging state to the intermediate state is p53->Sestrins, and the barrier height from the slow-aging state to the intermediate state is increased with increasing p53->Sestrins. This means that increasing the activation regulation of p53->Sestrins will stabilize...
the slow-aging state and therefore delay the aging process. The most sensitive regulation of barrier height from the fast-aging state to the intermediate state is Sestrins->AMPK, and the barrier height from the fast-aging state to the intermediate state is decreased with increasing Sestrins->AMPK. This means that increasing the activation regulation of Sestrins->AMPK will destabilize the fast-aging state and therefore increase the chance of slow aging, thus effectively delaying the aging process.

The authors apologize for these errors and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.
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