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CORRECTION

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Correction: Extinction of contextual fear memory is facilitated in TRPM2 knockout mice

Seung Yeon Ko[1†], Do Gyeong Kim[2†], Huiju Lee[2†], Sung Jun Jung[3,5*] and Hyeon Son[1,4,5*]

Correction: Molecular Brain (2025) 18:16
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Following publication of the original article [1], the authors identified an error in Fig. 1. Due to an error Fig. 5 was indicated also as Fig. 1. The correct figure and caption is given below.

†Seung Yeon Ko, Do Gyeong Kim and Huiju Lee contributed equally to this work.

The original article can be found online at https://doi.org/10.1186/s13041-025-01181-2.

*Correspondence:
Sung Jun Jung
eurijj@hanyang.ac.kr
Hyeon Son
hyeonson@hanyang.ac.kr
[1] Hanyang Biomedical Research Institute, Hanyang University, Seongdong-gu, Seoul 04763, Korea
[2] Graduate School of Biomedical Science and Engineering, Hanyang University, Seongdong-gu, Seoul 04763, Korea
[3] Department of Physiology, College of Medicine, Hanyang University, Seongdong-gu, Seoul 04763, Korea
[4] Department of Biochemistry and Molecular Biology, College of Medicine, Hanyang University, Seongdong-gu, Seoul 04763, Korea
[5] College of Medicine, Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul 04763, Republic of Korea

The incorrect Fig. 1:

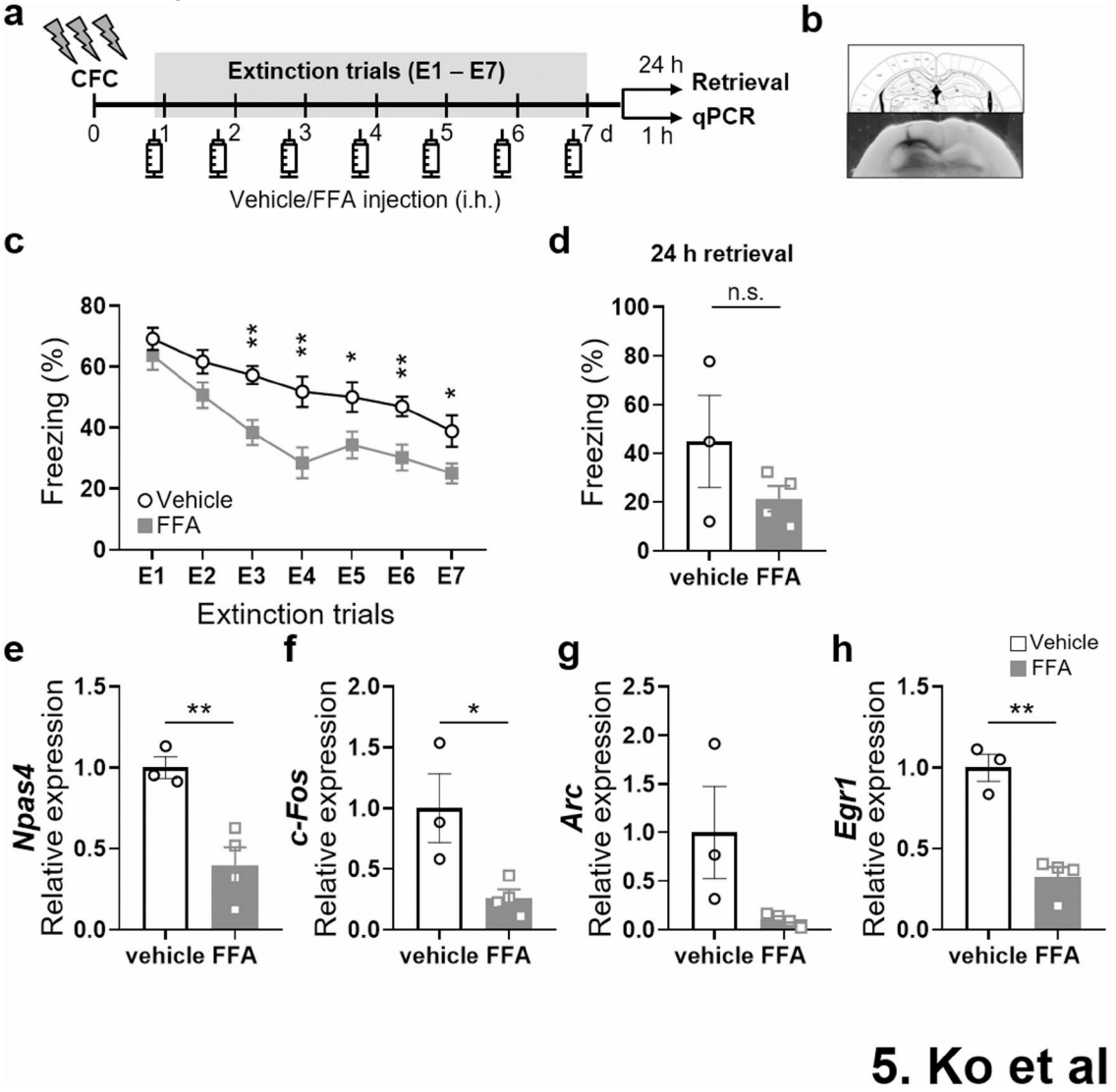

Fig. 1 Facilitated extinction of contextual fear memory in *Trpm2*$^{-/-}$mice. (**a**) Time line of the contextual fear conditioning procedure. The freezing re-sponse during habituation (BL) and acquisition was analyzed for 1 min per trial. A foot shock (2-s, 0.7 mA) was given at the end of habituation and the first three conditioning trials. (**b**) *Trpm2*$^{-/-}$ mice displayed reduced contextual fear acquisition (two-way repeated measures ANOVA, genotype: $F(1,44) = 23.53$, $p < 0.0001$; shock: $F(3,132) = 248.3$, $p < 0.0001$; genotype × shock interaction: Interaction, $F(3,132) = 12.26$, $p < 0.0001$; *Bonferroni* post hoc, 1st, $p < 0.0001$; 2nd, $p < 0.0001$; 3rd, $p = 0.0276$; WT, $n = 23$; *Trpm2*$^{-/-}$, $n = 23$). (**c**) Similar levels of freezing during fear retrieval 24 h after CFC and the first 5 min of extinction training session E1 (unpaired two-tailed t test, genotype: $t(46) = 0.1876$, $p = 0.852$; WT, $n = 24$; *Trpm2*$^{-/-}$, $n = 24$). (**d**) Time line of the contextual fear extinction procedure. During the extinction phase, the mice were placed in the chamber for 5 min without reinforcing shock. 24 h later, consolidated extinction memory was recalled by monitoring freezing behavior for 2 min in the original chamber. (**e**) *Trpm2*$^{-/-}$ mice showed a faster rate of contextual fear extinction over the 7-day course of extinction training (two-way repeated measures ANOVA, genotype: $F(1,46) = 6.369$, $p = 0.0151$; day: $F(6,276) = 65.95$, $p < 0.0001$; genotype × day interaction: Interaction $F(6,276) = 3.067$, $p = 0.0064$; *Bonferroni* post hoc, E2, $p > 0.999$; E3, $p > 0.999$; E4, $p = 0.1266$; E5, $p = 0.0556$; E6, $p = 0.0085$; E7, $p = 0.0278$; WT, $n = 24$; *Trpm2*$^{-/-}$, $n = 24$). Extinction retrieval tests 24 h (at 8 d: retrieval 1) and 21 d (at 28 d: retrieval 2) after extinction training showed that *Trpm2*$^{-/-}$ mice had less context-dependent freezing behavior to the conditioning context 24 h and 21 d after extinction training than WT mice (unpaired two-tailed t test, 24 h, $p = 0.0065$, WT, $n = 8$; *Trpm2*$^{-/-}$, $n = 8$; 28 d, genotype: $t(23) = 3.535$, $p = 0.0018$, WT, $n = 12$; *Trpm2*$^{-/-}$, $n = 13$). (**f**) Remote memory. Conditioned mice without extinction training were returned to the context 28 d later for the remote memory test. There were no significant differences in the percentage durations of freezing between WT and *Trpm2*$^{-/-}$ mice at day 28 ($p = 0.2405$). Animal freezing is measured as percent time spent freezing over a given test period. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, ****$p < 0.0001$ compared with WT littermates. Numbers in parentheses denote the number of mice in each group used for the experiment. All data are mean ± SEM. Detailed statistics in Supplementary Information

The correct Fig. 1:

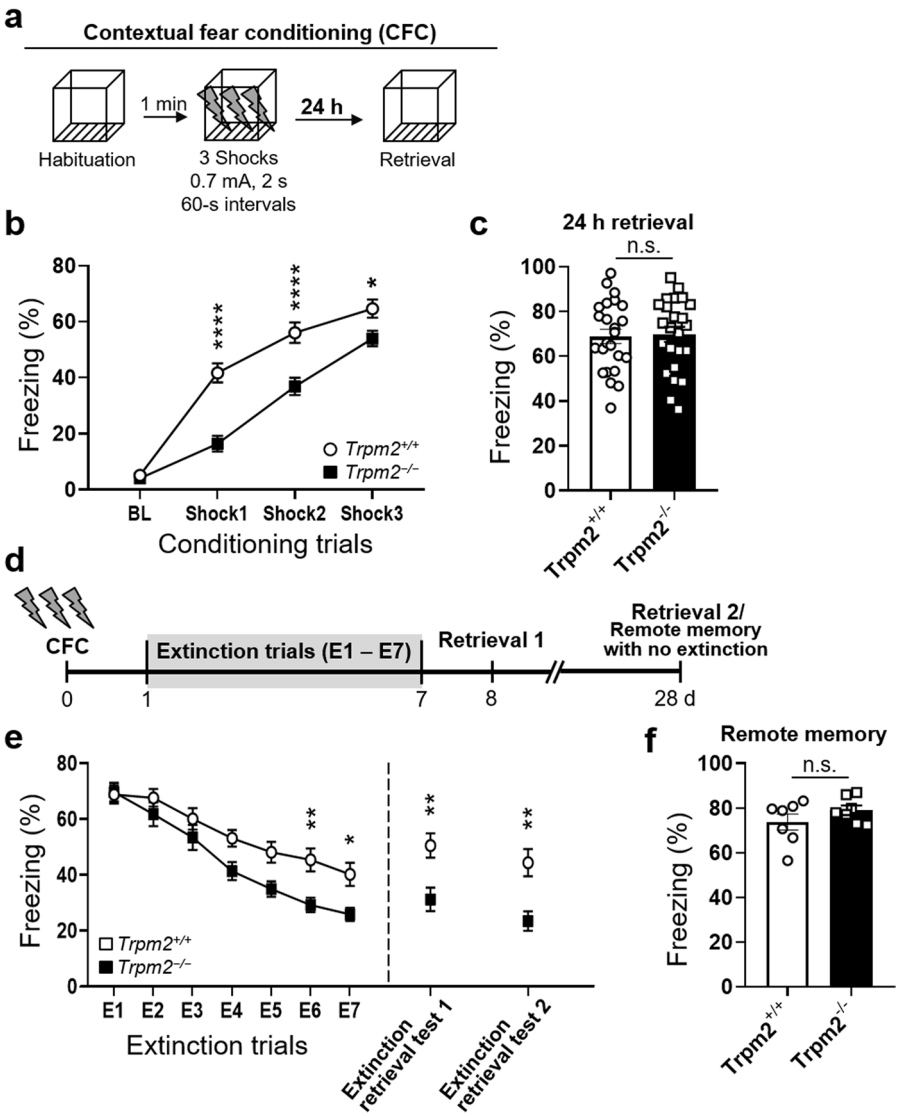

Fig. 1 Facilitated extinction of contextual fear memory in *Trpm2*$^{-/-}$mice. (**a**) Time line of the contextual fear conditioning procedure. The freezing re-sponse during habituation (BL) and acquisition was analyzed for 1 min per trial. A foot shock (2-s, 0.7 mA) was given at the end of habituation and the first three conditioning trials. (**b**) *Trpm2*$^{-/-}$ mice displayed reduced contextual fear acquisition (two-way repeated measures ANOVA, genotype: $F(1,44) = 23.53$, $p < 0.0001$; shock: $F(3,132) = 248.3$, $p < 0.0001$; genotype × shock interaction: Interaction, $F(3,132) = 12.26$, $p < 0.0001$; *Bonferroni* post hoc, 1st, $p < 0.0001$; 2nd, $p < 0.0001$; 3rd, $p = 0.0276$; WT, $n = 23$; *Trpm2*$^{-/-}$, $n = 23$). (**c**) Similar levels of freezing during fear retrieval 24 h after CFC and the first 5 min of extinction training session E1 (unpaired two-tailed t test, genotype: $t(46) = 0.1876$, $p = 0.852$; WT, $n = 24$; *Trpm2*$^{-/-}$, $n = 24$). (**d**) Time line of the contextual fear extinction procedure. During the extinction phase, the mice were placed in the chamber for 5 min without reinforcing shock. 24 h later, consolidated extinction memory was recalled by monitoring freezing behavior for 2 min in the original chamber. (**e**) *Trpm2*$^{-/-}$ mice showed a faster rate of contextual fear extinction over the 7-day course of extinction training (two-way repeated measures ANOVA, genotype: $F(1,46) = 6.369$, $p = 0.0151$; day: $F(6,276) = 65.95$, $p < 0.0001$; genotype × day interaction: Interaction $F(6,276) = 3.067$, $p = 0.0064$; *Bonferroni* post hoc, E2, $p > 0.999$; E3, $p > 0.999$; E4, $p = 0.1266$; E5, $p = 0.0556$; E6, $p = 0.0085$; E7, $p = 0.0278$; WT, $n = 24$; *Trpm2*$^{-/-}$, $n = 24$). Extinction retrieval tests 24 h (at 8 d: retrieval 1) and 21 d (at 28 d: retrieval 2) after extinction training showed that *Trpm2*$^{-/-}$ mice had less context-dependent freezing behavior to the conditioning context 24 h and 21 d after extinction training than WT mice (unpaired two-tailed t test, 24 h, $p = 0.0065$, WT, $n = 8$; *Trpm2*$^{-/-}$, $n = 8$; 28 d, genotype: $t(23) = 3.535$, $p = 0.0018$, WT, $n = 12$; *Trpm2*$^{-/-}$, $n = 13$). (**f**) Remote memory. Conditioned mice without extinction training were returned to the context 28 d later for the remote memory test. There were no significant differences in the percentage durations of freezing between WT and *Trpm2*$^{-/-}$ mice at day 28 ($p = 0.2405$). Animal freezing is measured as percent time spent freezing over a given test period. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, ****$p < 0.0001$ compared with WT littermates. Numbers in parentheses denote the number of mice in each group used for the experiment. All data are mean ± SEM. Detailed statistics in Supplementary Information

Figure 1 has been updated above and the original article [1] has been corrected.

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Reference

1. Ko SY, Kim DG, Lee H, Jung SJ, Son H. Extinction of contextual fear memory is facilitated in TRPM2 knockout mice. Mol Brain. 2025;18:16. https://doi.org/10.1186/s13041-025-01181-2.

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