Medical Xpress

Blood factor can turn back time in the aging brain

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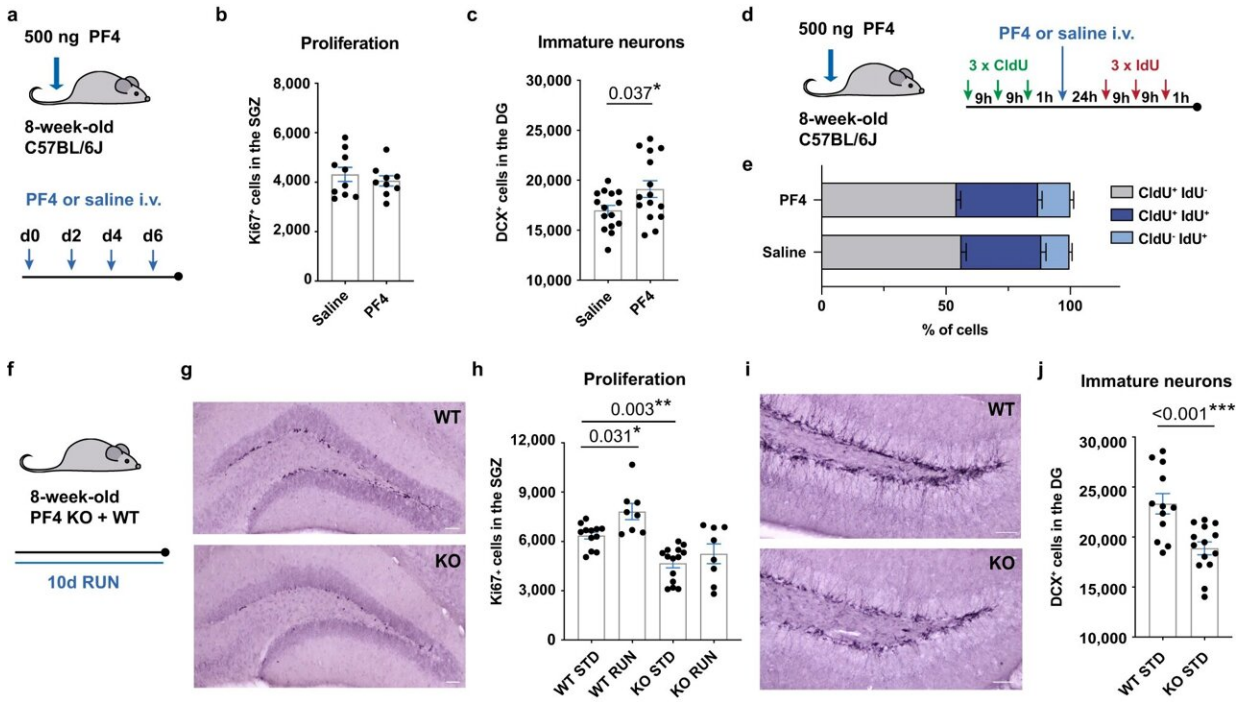

Systemic PF4 enhances adult hippocampal neurogenesis in vivo. **a** Experimental design of PF4 injection paradigm in young mice. **b**, **c** Intravenous (i.v.) PF4 injections for 1 week did not affect neural precursor cell proliferation in the subgranular zone (SGZ; n = 10 mice in saline group; n = 9 mice in PF4 group; counts of one hemisphere), but increased the number of doublecortin$^+$ (DCX$^+$) cells (n = 15 mice per group; counts of one hemisphere). **d** Experimental design of the double-labeling paradigm with CldU and IdU. **e** Acute administration of PF4 did not affect neural precursor cell proliferation, including the recruitment of cells from quiescence (n = 20 mice per group). **f** Running paradigm of PF4 knockout (KO) mice. **g** Representative images of Ki67$^+$ cells in the SGZ of PF4 KO and wildtype (WT) mice. Scale bar: 50 µm. **h** PF4 KO mice show a

significant reduction in the number of proliferating cells compared to wildtype mice. Physical exercise did not increase neural precursor proliferation in PF4 KO mice (WT STD $n = 12$; WT RUN $n = 8$; KO STD $n = 14$; KO RUN $n = 8$; counts of one hemisphere). **i** Representative images of DCX^+ cells in the dentate gyrus (DG) of PF4 KO and wildtype mice. Scale bar: 50 μm. **j** PF4 KO mice have significantly lower levels of baseline neurogenesis compared to wildtype littermates (WT STD $n = 12$; KO STD $n = 14$; counts of one hemisphere). STD standard-housing, RUN 10-day running. Bars are mean ± SEM. Statistical analysis was performed using unpaired Student's two-tailed *t* tests in (**c**) and (**j**), and one-way ANOVA with Sidak comparison in (**h**). *p