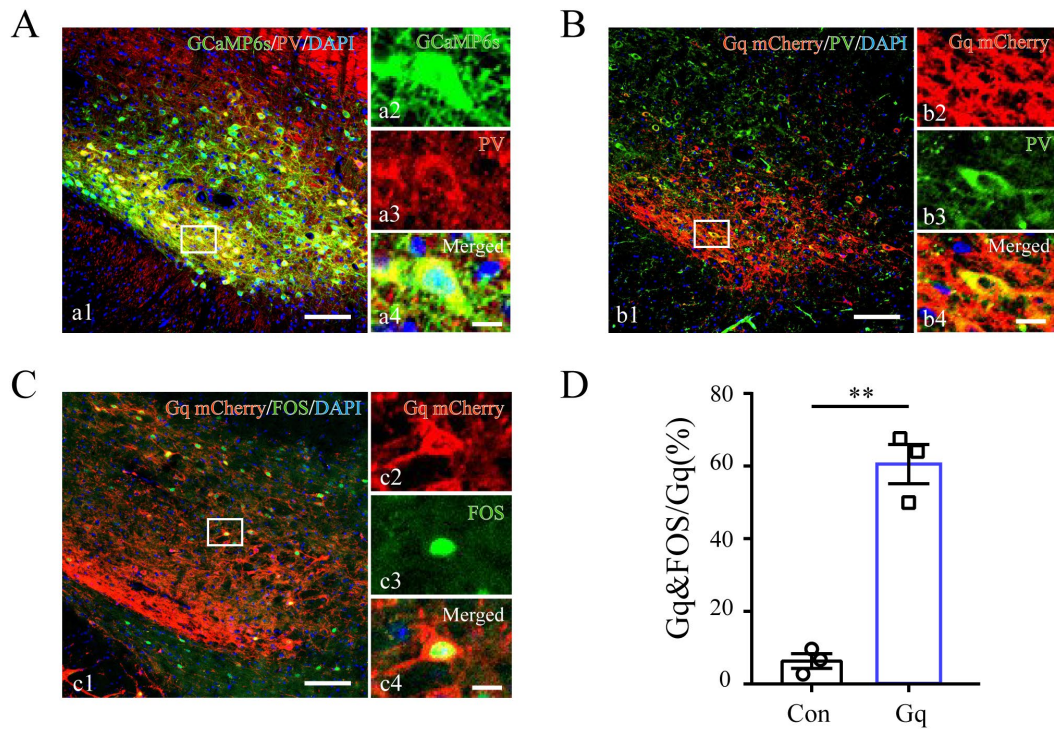


Supplemental Figure 1: (A) Schematic of the establishment of histamine and chloroquine induced acute itch models. (B) Intradermal injections of histamine and chloroquine induce robust scratching behavior in mice. Kruskal-Wallis test and Nemenyi multiple comparisons tests. $\chi^2=12.538$, $P=0.002$. $n=6$ mice in each group. (C) Schematic of the establishment of atopic dermatitis (AD) induced chronic itch model. (D) Consecutive topical application of calcipotriol induces robust scratching behavior in mice. Unpaired T test. $t=-11.394$, $P<0.001$. $n=6$ mice in each group. **** $P<0.0001$, *** $P<0.001$, ** $P<0.01$.



Supplemental Figure 2: (A) Representative photographs showing the expression of PV (red) in GCaMP6s-positive (green) neurons in the ZI of PV-Cre mice with atopic dermatitis. (B) Representative photographs showing the expression of PV (green) in Gq mCherry-positive (red) neurons in the ZI of PV-Cre mice with atopic dermatitis. (C) Representative photographs showing the expression of FOS (green) in hM3Dq-positive (red) neurons in the ZI of PV-Cre mice with atopic dermatitis. (D) Quantification of FOS-expressing neurons in mice with AAV-hM3Dq and AAV-mCherry injection showed CNO injection increased FOS expression in ZI PV neurons in atopic dermatitis mice of AAV-hM3Dq group. $n = 3$ mice per group, 3 sections per mouse. Unpaired T test. $t = -9.433$, $P = 0.001$. The framed area in a1, b1, and c1 was magnified in a2-4, b2-4, and c2-4, respectively. Scale bars represent 100 μm in a1, b1, and c1, and 50 μm in a2-4, b2-4, and c2-4. $**P < 0.01$.