**Figure S1. Evaluation of the inhibitive efficiency of NSC23766 and IPA-3.** (**A-C)** Representative immunoblots (**A**) and the densitometric quantification (**B, C**) showing the changes of active Rac1, Rac1, p-PAK1, PAK1, and ratios of active Rac1/Rac1 and p-PAK1/PAK1 in COH retinas at G1w with injections of NS (as control) or NSC23766 (NSC). (**D-G)** Representative immunoblots (**D**) and the densitometric quantification (**E-G**) showing the changes of p-PAK1, PAK1, and ratio of p-PAK1/PAK1 in COH retinas at G1w with injections of NS (as control) or IPA-3. All data are normalized to NS G1w. n = 6 for each group. \**P* < 0.05, \*\**P* < 0.01, and \*\*\**P* < 0.001 *vs*. NS G1w. Two-tailed unpaired t-test.

**Figure S2. Evaluation of the efficiency of microglia depletion by clodronate liposomes treatment.** **(A)** Representative images showing the number of Iba1+ cells in whole flat-mounted retinas at day 3 and 5 after the treatment of PBS-liposomes (PBS-Lip) (a1) or clodronate liposomes (Clo-Lip) injections, respectively. Scale bar: 20 µm for all images. (**B)** Changes of average number of Iba1+ cells under different conditions as shown in A. n = 3 retinas for all groups. \*\*\**P* < 0.001 *vs*. Ctr. One-way ANOVA with Tukey’s multiple comparison test.

**Figure S3. Evaluation of the efficiency** **of Rac1 conditional knockout in astrocytes. (A, B)** Micrographs showing triple immunostaining of AAV (green) and Rac1 (white) in astrocytes (GFAP, red) in the ONH of retinal vertical slices taken from the sub-retinal injections of GFP-AAV (**A**) or GFAP-Cre-AAV (**B**) in Rac1ﬂox/ﬂox mice. Scale bars: 20 µm. a1-a6 and b1-b6 are the enlarged images of the white squares in A and B, respectively. Arrows indicate triple-staining of AAV, GFAP and Rac1. Scale bars: 10 µm.