Supplementary information

Supplementary Table 1, Supplementary Fig. 1-6, and Supplementary Video 1-7.

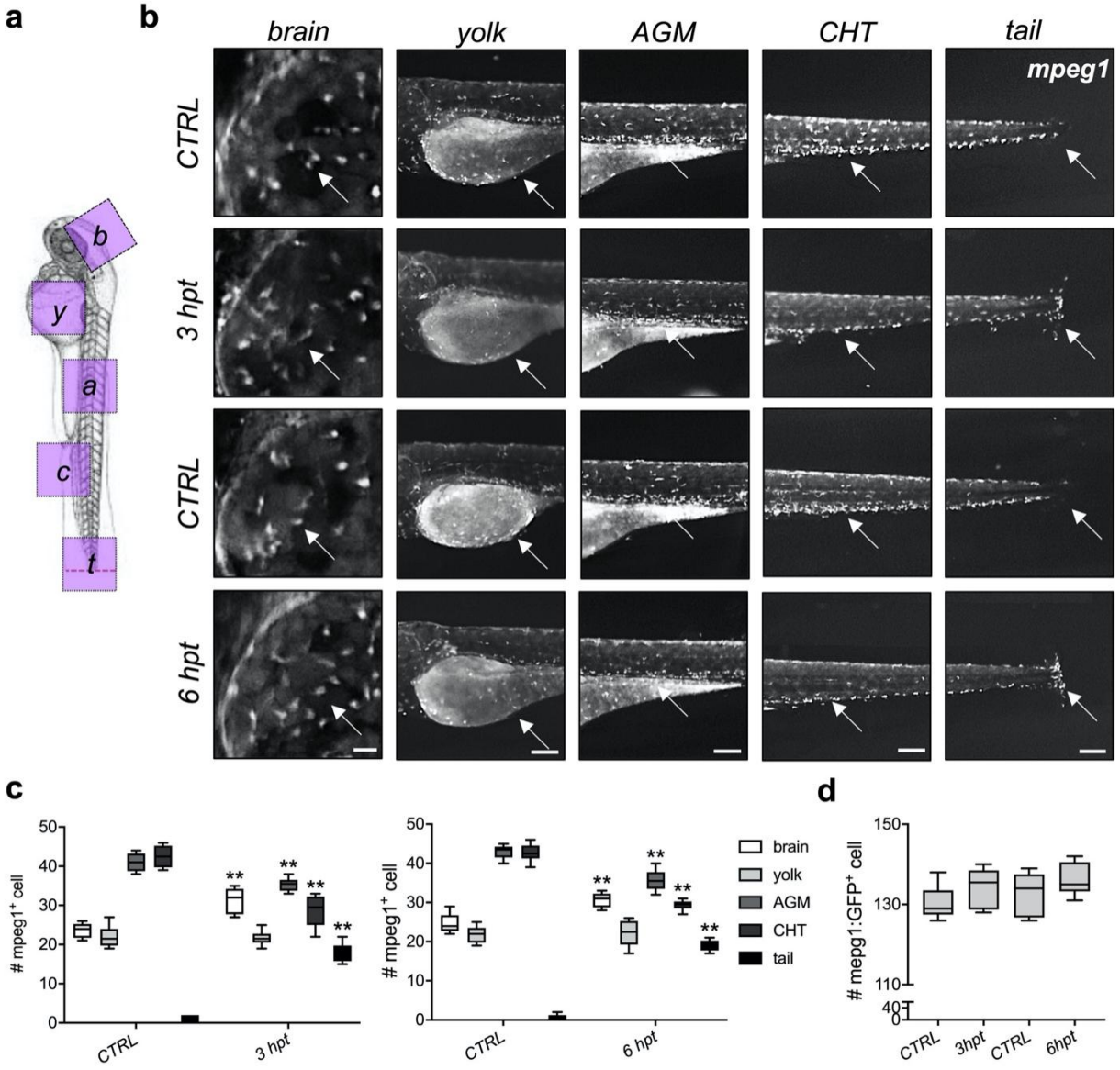
Supplementary Table

Supplementary Table 1. List of primers used in the current study.

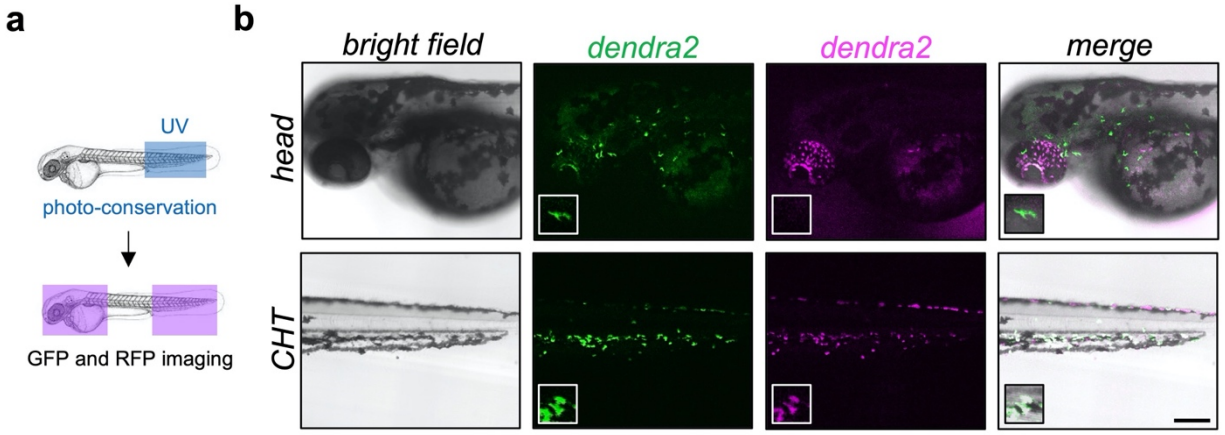
Name	Sequence (5'-3')
Primers for Genotyping	
ZF_*il1b*_E4_GF	CGACATTTCACATCTGCACCG
ZF_*il1b*_E4_GR	GTACCTTGGATGACGTTCGC
Primers for qPCR	
ZF_*il1b*_QF	TGGACTTCGCAGCACAAAATG
ZF_*il1b*_QR	GTTCACTTCACGCTCTTGGATG
ZF_*tnfa*_QF	TTCACGCTCCATAAGACCCA
ZF_*tnfa*_QR	CCGTAGGATTCAGAAAAGCG
ZF_*il34*_QF	ATCGGACCATGCTTTGCCTG
ZF_*il34*_QR	CCCTACAACAGCAACACGGA
ZF_*il6*_QF	TGAAGACACTCAGAGACGAGCAGTT
ZF_*il6*_QR	AGGTTTGAGGAGAGGAGTGCTGAT
ZF_*il8*_QF	CCTGGCATTTCTGACCATCAT
ZF_*il8*_QR	GATCTCCTGTCCAGTTGTCAT
ZF_*il10*_QF	TCAGAGCAGGAGAGTCGAATGCA
ZF_*il10*_QR	CGATTGGGGTTGTGGAGTGCTT
ZF_*ccl2*_QF	GTCTGGTGCTCTTCGCTTTC
ZF_*ccl2*_QR	TGCAGAGAAGATGCGTCGTA
ZF_*lcp1*_QF	GAAGCTCTGATCGCTCTGCT

ZF_*lcp1*_QR	GTTGTTGATTTTGGGGCATC
ZF_*caspase3*_QF	TAGTGTGTGTGTTGCTCAGTC
ZF_*caspase3*_QR	CTCGACAAGCCTGAATAAAG
ZF_*b-actin*_QF	TTCCTTCCTGGGTATGGAATC
ZF_*b-actin*_QR	GCACTGTGTTGGCATACAGG
Primers for ISH Probes	
ZF_*il1b*_PF	TGCAATGCACGATTTGCGAT
ZF_*il1b*_PF	AGAATAAGCAGCACTTGGGGA
ZF_*il6*_PF	TCAGAGACGAGCAGTTTGAGAG
ZF_*il6*_PR	CCTCTTGGGGTCTTTCCCTC

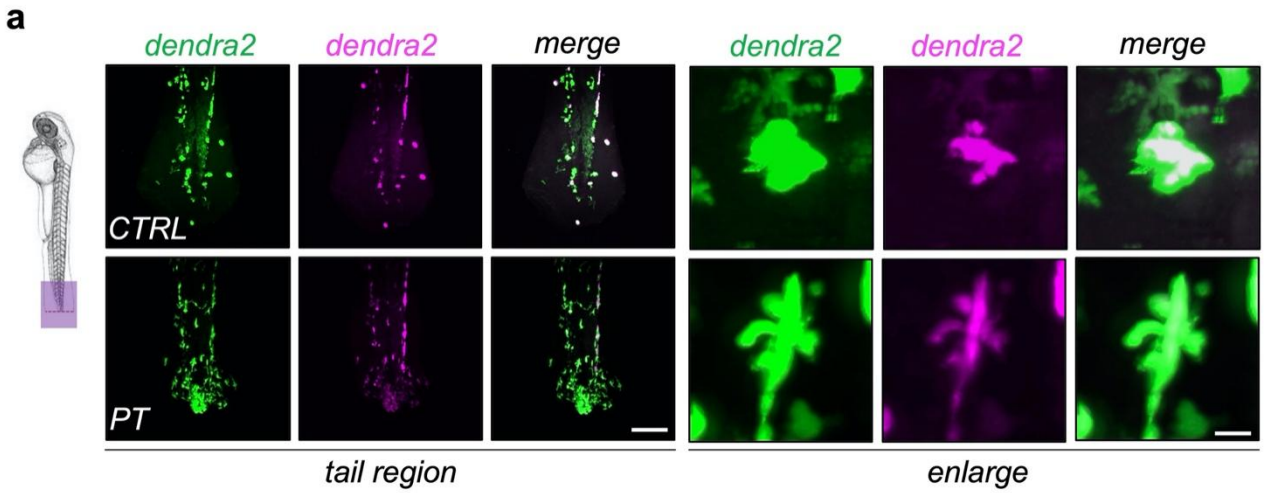
Supplementary Figures



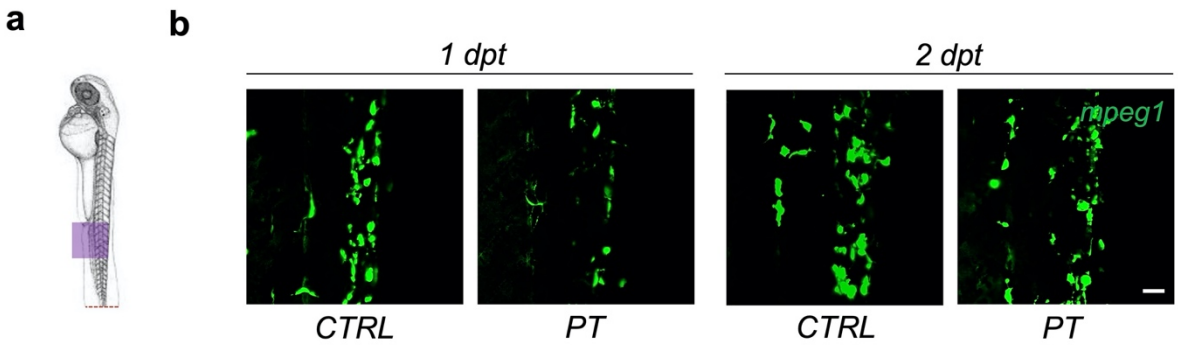
Supplementary Fig. 1. Redistribution of macrophages in response to peripheral trauma. (**a-c**) The number of *mpeg1+* macrophages in various positions, including the brain (b), yolk (y), aorta-gonad-mesonephros (AGM, a), caudal hematopoietic tissue (CHT, c) and tail (t), and the total number of *mpeg1+* macrophages (**d**) of zebrafish body at 3 hpt and 6 hpt. Independent t-test, **, $p < 0.01$ compared with CTRL. Scale bar, 40 μm (brain), 200 μm (yolk, AGM, CHT, and tail).



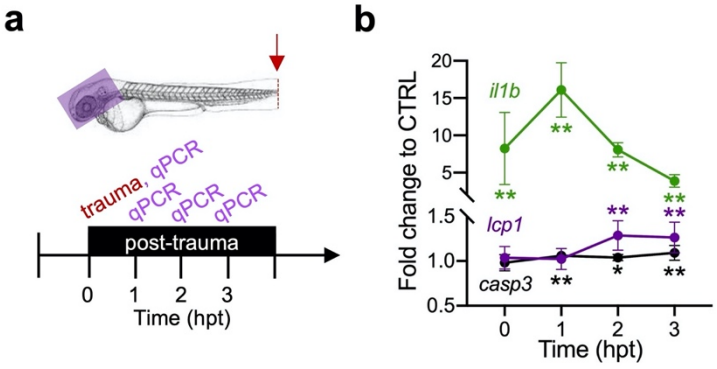
Supplementary Fig. 2. Dendra2 photo-conservation and confirmation. (**a**) Schematic diagram of the body regions for photo-conservation (tail/CHT) and confirmation (head and tail/CHT). (**b**) Photo-conserved magenta+ macrophages were detected in the tail/CHT region but not in the head region. Scale bar, 200 μm.



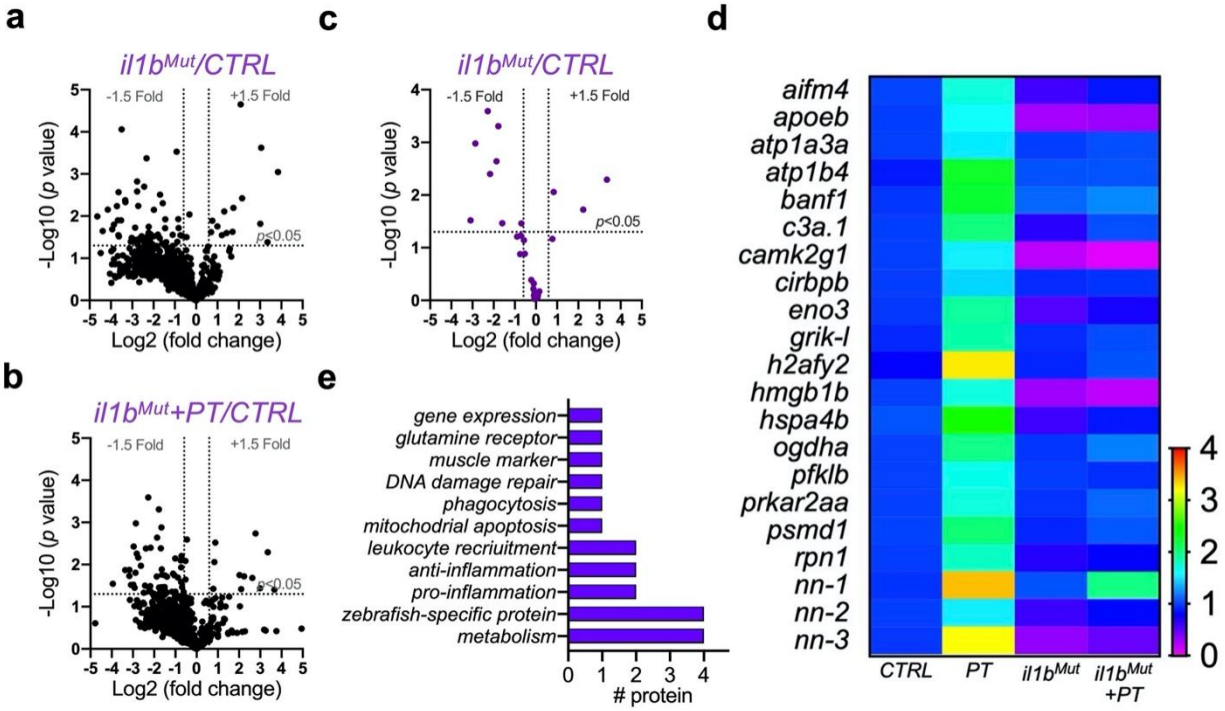
Supplementary Fig. 3. Recruitment of photo-conserved macrophages in the traumatic site. (**a**) Photo-conserved magenta+ macrophages were detected in the traumatic site of 4dpf zebrafish larvae. Scale bar, 200 μm, 20 μm (enlarge).



Supplementary Fig. 4. Peripheral macrophages return to caudal hematopoietic tissue after peripheral trauma. (**a-b**) Light-sheet imaging showed that *mpeg1*+ macrophages returned to caudal hematopoietic tissue at 2 days post-trauma. Scale bar, 100 μm.



Supplementary Fig. 5. Inflammatory, apoptotic, and leukocyte responses in the brain after peripheral trauma. (a) Experimental setup. (**b**) qPCR results show that inflammatory cytokine (*il1b*), apoptosis (*caspase3*), and leukocyte invasion (*lcp1*) sequentially increased in the brain after peripheral trauma. One-way ANOVA, **, $p < 0.01$ compared with CTRL.



Supplementary Fig. 6. Systemic inflammation-mediated brain proteomic responses to peripheral trauma. (**a**-**b**) The volcano plot illustrated the proteins significantly ($p < 0.05$, independent t-test) changed (> 1.5 folds) in the brain at 1 dpt in *il1b*^{Mut}/CTRL and *il1b*^{Mut}+PT/CTRL. (**c**) The volcano plot illustrated the identified proteins significantly changed in the brain of *il1b*^{Mut} zebrafish at 1 dpt. (**d**) Heatmap illustrated the fold change of identified proteins among CTRL, PT, *il1b*^{Mut}, and *il1b*^{Mut}+PT groups. (**e**) Classification of identified proteins into various molecular pathways or processes.

Supplementary Videos

Supplementary Video 1. Leukocyte activities in the brain of zebrafish larvae without peripheral trauma. Red arrow, active leukocytes.

Supplementary Video 2. Leukocyte activities in the brain of zebrafish larvae with peripheral trauma. Red arrow, active leukocytes**.**

Supplementary Video 3. Leukocyte activities in the brain of *il1b* mutant zebrafish larvae. Red arrow, active leukocytes**.**

Supplementary Video 4. Leukocyte activities in the brain of *il1b* mutant zebrafish larvae with peripheral trauma. Red arrow, active leukocytes**.**

Supplementary Video 5. Distribution pattern 1 of active leukocytes in the mid-hindbrain boundary of zebrafish larvae. Red arrow, active leukocytes**.**

Supplementary Video 6. Distribution pattern 2 of active leukocytes within the brain of zebrafish larvae. Red arrow, active leukocytes**.**

Supplementary Video 7. Distribution pattern 3 of active leukocytes migrating from the peripheral tissue into the brain. Red arrow, active leukocytes**.**