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525 Sup. Figure S1. mRNA expression of P2ry12, TMEM119, FCRLS, and IBA1 by blood 526 monocytes, embryonic retinal microglia, and engrafted monocytes.

The CX3CR1^{+/GFP} bone marrow transfer model was used to distinguish peripheral infiltrating 527 monocytes from resident microglia. Naïve microglia cells and blood monocytes were collected 528 from uninjured bone marrow transferred mice. Injured microglia and engrafted monocytes 529 were collected from retinas 45 days after ocular injury in bone marrow transferred mice. Cells 530 531 were collected using flow cytometry sorting with a gating strategy as follows: microglia: CD45⁺ CD11b+GFP-negativeCX3CR1/BV605+positive or CD45+ CD11b+ GFP-negativeCX3CR1/APC+positive. 532 blood monocyte and engrafted monocytes: CD45⁺ CD11b⁺ GFP^{+positive}CX3CR1/BV605^{+positive} 533 or GFP^{+positive}CX3CR1/APC^{+positive}. RNA was isolated and mRNA expression of P2ry12, 534 535 TMEM119, FCRLS and IBA1 genes was evaluated by PCR. P2ry12, TMEM119, and IBA1 mRNA level were normalized to blood monocyte, while the FCRLS mRNA level was 536 537 normalized to naïve microglia. No FCRLS was detected in blood monocytes. This data indicates P2ry12, TMEM119, FCRLS, and IBA1 mRNA in engrafted monocytes is increased 538 539 after retinal engraftment compared to blood monocytes.

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541 Sup. Figure S2. Circulating monocytes do not express microglia makers.

542 Immunostaining of circulating blood monocytes from CX3CR1^{+/GFP}::CCR2^{+/RFP} transgenic 543 mice shows absence of P2ry12, IBA1, and TMEM119 expression. MHC II staining is present 544 in engrafted monocytes. *Scare bar* = 20 μm

546 Sup. Figure S3. P2ry12 expression in engrafted monocyte at 14 days.

547 The CX3CR1^{+/GFP}::CCR2^{+/RFP} bone marrow chimera model was employed to differentiate 548 engrafted monocytes (GFP⁺CCR2⁺) from embryonic microglia (GFP⁻ CCR2⁻). Peripheral 549 monocytes acquired P2ry12 expression 14 days after engraftment into the retina. *Scale bar* = 550 $50 \ \mu m$. bioRxiv preprint doi: https://doi.org/10.1101/2024.09.09.612126; this version posted September 14, 2024. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY 4.0 International license.

552 **Sup. Figure S4.** Protein expression of Iba1 in engrafted monocytes.

553 The CX3CR1^{+/GFP}::CCR2^{+/RFP} bone marrow chimera model was employed to differentiate 554 engrafted monocytes from embryonic microglia. Eighty-five percent of engrafted GFP⁺ 555 monocytes become IBA1⁺ at day 1 of infiltration, while all become IBA1⁺ at 7 and 45 days post 556 engraftment. *ns: Not significant. Yellow arrows indicate GFP^{-negative} IBA1⁺positive microglia cells* 557 *and white arrows GFP^{+positive} engrafted monocytes. Scare bar = 50 µm.*

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Sup. Figure S2

CX3CR1+/EGFP::CCR2+/RFP

Blood collection and staining





