

Description of Additional Supplementary Files

Supplementary Movie 1. The distribution, morphology and movement behaviours of *coro1a-Dsred⁺* (c-D⁺) cells in the WT and *bax^{cq55}* midbrains. The c-D⁺ cells are detected in WT and *bax^{cq55}* larval brain. 2 dpf WT c-D⁺ cells (PM, asterisks) are morphologically long-and-thin and they move randomly and rapidly, even exiting the observation field. 3 dpf WT c-D⁺ cells (AM, arrows) present amoeboid morphologies and they are inert and stay locally. The c-D⁺ cells in 3 dpf *bax^{cq55}* brain (arrowheads) are morphologically and behaviourally similar to those of 2 dpf counterparts. Time-lapse images are captured for 145 min (1 frame/5 min) and single frame is generated as projections of z stacks of 16 planes with 5 μ m distance, covering approximately 80 μ m. The *Tg(*coro1a*:DsRed)* transgenic line is used.

Supplementary Movie 2. The appearance and increase of apoeb-GFP signal in an amoeboid c-D⁺ cell. A c-D⁺ cell performs phagocytosis (arrowheads) and changes to the amoeboid appearance. It then gradually turns on the expression of apoeb-GFP signal. The double transgenic line *Tg(*coro1a*:DsRed; apoeb:GFP)* is used. The imaging is started from 55 hpf and lasts 425 min (1 frame/5 min).

Supplementary Movie 3. Movement behaviours of *coro1a*-Kaede⁺ cells upon apyrase treatment. Time-lapse imaging reveals the dynamic behaviours of *coro1a*-Kaede⁺ microglial cells in the midbrain after application of control buffer or apyrase at 60 hpf. Time-lapse images are captured for 195 min (1 frame/5 min) and single frame is generated as projections of z stacks of 16 planes with 5 μ m distance, covering approximately 80 μ m.

Supplementary Movie 4. The neuronal calcium signals of *bax^{cq55}/Tg(HuC:GCaMP6s)* and its sibling. A continuous imaging of one unilateral optic tectum region of 3 dpf *bax^{cq55}/Tg(HuC:GCaMP6s)* and its sibling after injection of Annexin V-Cy5 (magenta). Images are captured at one plane, approximately 30 μ m in depth. The imaging duration is 16 min 35 sec (1 frame/5 sec).

Supplementary Movie 5. The neuronal calcium signals in *bax^{cq55}/Tg(HuC:GCaMP6s)* after IP3- and glutamate-uncaging. A continuous imaging of one unilateral optic tectum region of 3 dpf *bax^{cq55}/Tg(HuC:GCaMP6s)* after IP3- and glutamate-uncaging. Images are captured at one plane, approximately 30 μ m in depth. The duration of imaging is 16 min 35 sec (1 frame/5 sec).

Supplementary Movie 6. The neuronal calcium signals of *Tg(HuC:GCaMP6s)* after treatment with nemadipine or nilvadipine. A continuous imaging of one unilateral optic tectum region of 3 dpf *Tg(HuC:GCaMP6s)* after the application of nemadipine and nilvadipine. Images are captured at one plane, approximately 30 μ m in depth. The duration of imaging is 16 min 35 sec (1 frame/5 sec).

Supplementary Movie 7. The movement behaviours of c-D⁺ cells after treatment with nemadipine. The motility of nemadipine treated c-D⁺ cells is more random and active than those in control group (DMSO). The imaging is started at 3 dpf and lasts 525 min. Images of each group are taken every 5 min. Single frame is generated as projections of z stacks of 16 planes with 5 μ m distance, covering approximately 80 μ m.