SUPPLEMENTARY MOVIE CAPTIONS

Movie S1. The tail fin of an *Et(HG7L)* larva at 3 days post fertilization (3 dpf) was cut to remove neuromast L6-8 as described in Fig. 1, embedded in agar and imaged under confocal microscopy. Images were taken at 6 min per frame for 6 h. This video shows the Phase I of neuromast regeneration described in Fig. 1. At the leading end toward cutting edge (bottom), most interneuromast cells (INCs) stayed in line with visible cell protrusions (arrowheads). Several INCs (arrows) were seen to crawl onto the original lNC. Time is shown on the top right corner.

Movie S2. The *Et(HG7L)* larva was treated described in Video 1. This video shows the Phase II of neuromast regeneration. A large cluster was formed with many visible cell protrusions (arrowheads) at both leading and lagging end toward the cutting edge at the bottom.

Movie S3. The *Et(HG7L)* larva was treated described in Video 1. This video shows the Phase III of neuromast regeneration. A new neuromast was formed with a clear ring-like structure and GFP-labeled mantle cells.

Movie S4. AG1478 caused hyperactive cell protrusion and cell division. Cell protrusions are marked by arrowheads. Mother cell and two daughter cells are labeled by white and magenta asterisks, respectively.

Movie S5. *In toto* imaging analysis shows differential macrophage (red) behaviors during regeneration. Larvae from the cross of *Tg(mpeg1:mCherry; FoxD3:GFP)* and *Tg(-8.0cldnb:NTR-hKikGR); Et(HG7L)* were treated with Mtz and monitored under a light-sheet fluorescent microscope. Time-lapse movies of merged green and red channels (top row), merged channels with cell tracking (purple circles, middle row), and red channel with cell tracking (bottom row) are combined vertically and presented. Images were taken at 5 min per frame for 6 h 35 min as shown on the top left.

Movie S6. Uneven distribution of recruited macrophages (red) during regeneration were analyzed and presented as graphic interchange format of bar chart (upper row) to reveal the dynamics of macrophage distribution. Larvae from the cross of *Tg(mpeg1:mCherry; FoxD3:GFP)* and *Tg(-8.0cldnb:NTR-hKikGR); Et(HG7L)* were treated with Mtz and observed under a light-sheet fluorescence microscope. Time-lapse movies of merged channels with cell tracking (middle row), and red channel with cell tracking (bottom row) are combined vertically and shown here. Images were

taken at 5 min per frame for 11 h 55 min as shown on the top left of images.

Movie S7. This video is a three-dimensional pseudo color reconstruction. While most macrophages (red, left) were crawling on INCs (left), some macrophages (red, middle) could scroll through the space between INCs and underneath SWCs (right).

Movie S8. Macrophages (red) could push away interneuromast cells (green, indicated by an arrow) while passing by.

Movie S9. Macrophages (red) were not only in contact with interneuromasts (green, arrow) but were also dynamically embracing the second posterior lateral line primordium (green, open arrow) during development.