

## SUPPLEMENTARY MATERIAL

Calzolari, Terriente and Pujades, EMBOJ-2013-86003

**Movie S1:** In vivo imaging of Tg[elA:GFP] embryos injected with H2B-mCherry mRNA, from 12hpf-13hpf, focusing on a single GFP-positive cell from r5 (see blue dot). Dorsal views with anterior to the left.

**Movie S2:** In vivo imaging of Tg[elA:GFP] embryos injected with H2B-mCherry mRNA, from 11hpf-13hpf, focusing on a single GFP-negative cell from r6. Note that GFP-negative cell at the boundary that undergoes cell division is sorted out from r5 along the movie (see blue dot). Dorsal views with anterior to the left.

**Movie S3:** In vivo imaging of an Tg[elA:GFP] embryo injected with H2B-mCherry mRNA at 4-8cell stage, from 11hpf to 16hpf. Several single cells were back-tracked within r3 to r6. Note the number of cell nuclei in the movie is lower than the total of tracked-nuclei (colored dots in Fig 2M'-R') to help better visualization. Dorsal views with anterior to the left.

**Movie S5:** In vivo imaging of double transgenic Mu4127/Tg[ $\beta$ actin:HRAS-GFP] embryos from 21hpf to 30hpf. Partial sequence, 21hpf to 25hpf, of the acquired time-lapse showing a cell dividing close to the boundary. Dorsal views with anterior to the top.