**Movies S1 and S2:**

Representative movies of *th2:Gal-VP16; UAS-E1b:NTR-mCherry* larvae treated with DMSO (Movie 1) or MTZ (Movie 2) from 5-7 dpf, showing spontaneous and evoked swimming.

**Movie S3:**

3D confocal projection of the *th2:Gal4: UAS:ChR2-YFP* brain shown in Fig. 3J.

**Movies S4 and S5:**

Representative movies of *th2:GFP* (Movie 4) and *th2:Gal4-VP16;UAS:ChR2-YFP* (Movie 5) larvae during blue light pulse. Blue arrow in top left corner indicates when blue light is on.