**Response to reviewers’ comments**

**Response to reviewer #1:**

**A:** We thank Reviewer #1 for the assessment of our study.

**Response to reviewer #2:**

**R2:**“The authors should use DF/F to quantify over time the calcium response in photoreceptors. Furthermore, they should show that there is no concern of motion artifact when the pressure changes - as it could be a concern”.

**A:** We decided not to use DF/F as a metric to quantify the calcium response in the cPRCs due to the inability of this metric to account for motion artifacts. Therefore, we opted for the DR/R metric (as defined in Böhm et al. 2016), which uses the fluorescence signal from an independent channel (in our case the signal of the tdTomato FP) to account for changes in fluorescence not related to changes in calcium concentration.

**R2: “**The authors have not shown  
1- how the off response to decrease of pressure is mediated  
2- which receptor/channel mediates in photoreceptors the response to increased pressure,  
3- nor how the integration of light and pressure information is integrated by photoreceptors in order to guide the behavior of the larvae.

These points are beyond the scope of the study. However, if possible within a short time frame, it would be really interesting to find out whether conflicting stimuli or converging stimuli (light & pressure) can cancel each other out or synergize. In particular since the authors cite unpublished results in the discussion: "Our unpublished results indeed suggest that green light determines the direction of swimming and can override upward swimming induced by pressure, which only influences the speed of swimming (LABC and GJ, unpublished)." Showing in one panel this very cool phenomenon would be exciting & open tons of questions for the field.”

**A:** We agree that the three points listed by the reviewer were not addressed in our study.

Point#1: although we ran pressure release experiments to characterise in more detail the off response to pressure in three-day-old larva, our setup did not allow us to control pressure release as accurately as we could for pressure increase. Therefore, we decided not to address this aspect of the response in this study.

Point #2: we decided to defer experiments to address this question to a future date due to the significant time and resource investment that would be needed to screen for the expression, and functional role of potential candidates in the pressure transduction mechanism. For the present study, we raise the possibility that TRP channels may play a role in the transduction mechanism, due to their polymodality and participation in the phototransduction cascade.

Point #3: We considered that the complexity of this question merits a separate study, where both cues can be accurately titrated and temporally combined to dissect the mechanisms of sensory integration. Although our preliminary results clearly show a predominance of light in determining swimming direction, we are not able to include data with the adequate number of replicates and technical precision required. We therefore reworded the sentence quoted by the reviewer to better reflect our current knowledge of the pressure/light interaction.