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PERCEPTUAL MECHANISMS OF SOCIAL AFFILIATION AND THE ROLE OF OXYTOCIN IN ZEBRAFISH

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Background: Visual recognition of individuals is crucial for social interactions and survival. Socially relevant visual information is extracted from the environment and processed in specific brain centers to guide social behaviors. However, little is still known about how visual cues contribute to social affiliation and which are the underlying mechanisms.

Aims: In this work we proposed to address the contribution of two main social visual features in zebrafish: conspecific form and biological motion, on social affiliation. Furthermore, we addressed whether this contribution was mediated by oxytocin, a known neuromodulator of social behaviors across species, by using a genetic mutant zebrafish line with impaired oxytocin signaling.

Method: Using a videoplayback system, zebrafish was allowed to choose between two stimuli (videos) differing in conspecific shape, biological motion, or both. The time spent close to each stimulus was taken as a measure of preference.

Results: We demonstrated that each cue, conspecific form and biological motion, is sufficient to promote social attraction, and the combination of the two induces a robust preference towards a conspecific. The regulation of this visual processing mechanism is mediated by oxytocin, by regulating conspecific form and biological motion differently.

Conclusions: These findings support that visual cues are important for social affiliation in zebrafish and that oxytocin plays a role in very basic perceptual mechanisms underlying the recognition of conspecifics.

Keywords: Social affiliation, Perceptual mechanisms, Oxytocin

Publications:

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Perceptual mechanisms of social affiliation in zebrafish are modulated by oxytocin signaling (*in submission*).

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