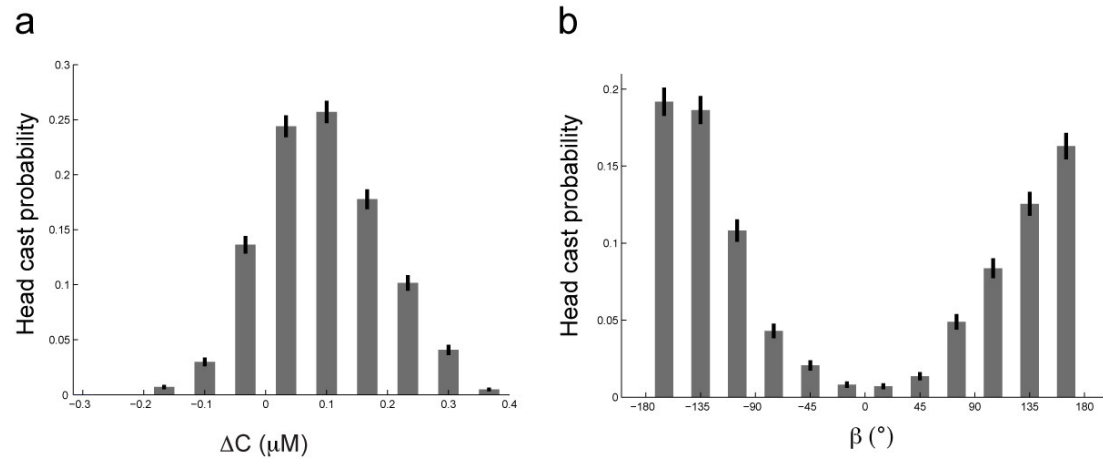


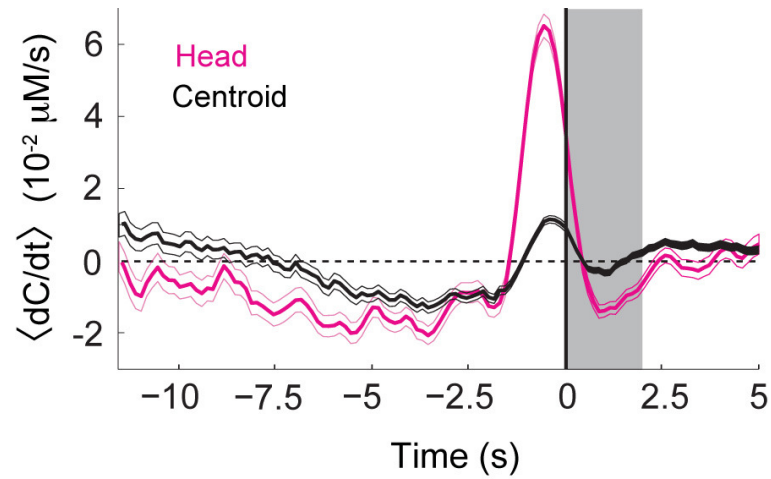
SUPPLEMENTARY FIGURES

Active sampling and decision making in *Drosophila* chemotaxis

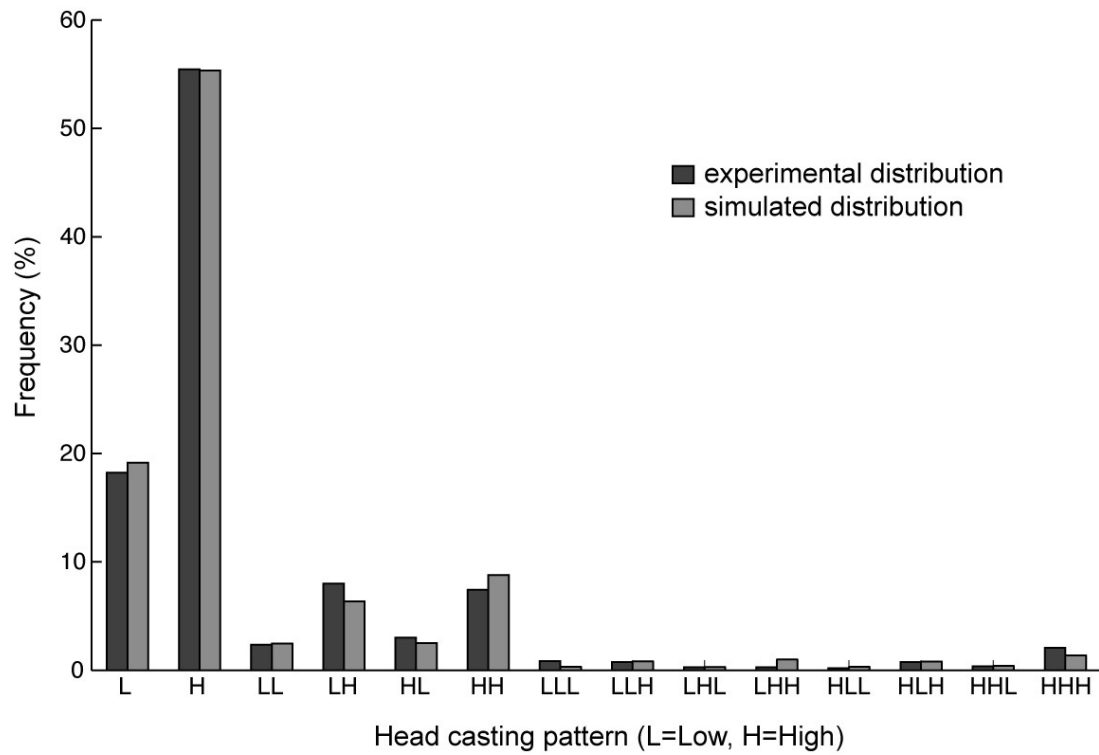
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Supplementary Figure S1. Head cast probability as a function of local concentration change and bearing angle. (a) Distribution of concentration changes experienced due to a head cast (ΔC). The typical concentration change achieved by sweeping the head laterally during a head cast is on the order of a hundred nanomolar. Error bars indicate s.e.m. Total number of turns is $n=1243$. **(b)** Head cast probability as a function of the bearing angle. The probability of a head cast event increases when the larva is oriented down-gradient ($|\beta| > 90^\circ$). Head casting hardly ever takes place when the larva is heading toward the gradient. Error bars indicate s.e.m.



Supplementary Figure S2. Turn-triggered average of the concentration derivative. History of the changes in stimulus intensity, dC/dt , measured at the head and at the centroid for wild type larvae in the near-source paradigm. The main observations drawn for the turn-triggered average of the relative change in concentration, $1/C \cdot dC/dt$, hold true for dC/dt . Thin lines indicate s.e.m. Grey bar shading indicates turning. Total number of turns is $n=1243$.



Supplementary Figure S3. Frequency of head casting patterns. Simulated versus experimental distributions of head casting patterns quantifying the sequences of cast to high (H) and low (L) prior to turning. The simulated frequencies were calculated by averaging the individual distributions of a set of 1,000 sequences of state transition.