

# Supplementary material

## Taxic responses to visual contrast

setup	N	von Mises distribution		$f_D$ (%)	repeated G-test with William's correction		
		$\mu$ (95%CI)	$\kappa$ (95%CI)		$G_{total}$	$G_{pool}$	$G_{heterogeneity}$
BW11	100	-0.06 (6.19, 6.25)	32.38 (20.4, 57.3)	57.1	35.8 (23 d.f., *)	2.0 (1 d.f., 0.158)	33.8 (22 d.f., 0.051)
BG11	188	0.01 (0.01, 0.02)	727.07 (563.47, 1046.45)	37.7	60.4 (38 d.f., *)	7.42 (1 d.f., **)	53.0 (37 d.f., *)
GW11	127	-0.03 (6.25, 6.27)	251.96 (200.78, 340.94)	75.7	72.2 (26 d.f., ***)	30.6 (1 d.f., ***)	41.6 (25 d.f., *)

**Table S1.** Statistical results of movement direction in visual contrast experiments.  $f_D$ , the frequency of moving towards the darker surface in each setup, excluding those overlapped with contrats edges. G-values are presented with d.f. and  $P$ -values in parentheses (\*,  $P < 0.05$ ; \*\*,  $P < 0.01$ ; \*\*\*,  $P < 0.001$ ). See Fig. 4.

setup	N	$f_{stripe}$ (%)	repeated G-test with William's correction		
			$G_{total}$	$G_{pool}$	$G_{heterogeneity}$
BW91	95	82	43.48 (9 d.f., **)	20.08 (1 d.f., ***)	23.4 (18 d.f., 0.18)
BW19	100	76	86.49 (20 d.f., ***)	61.04 (1 d.f., ***)	25.45 (19 d.f., 0.15)

**Table S2.** Statistical results of movement direction in visual contrast experiments.  $f_D$ , the frequency of moving towards the darker surface in each setup, excluding those overlapped with contrats edges. G-values are presented with d.f. and  $P$ -values in parentheses (\*,  $P < 0.05$ ; \*\*,  $P < 0.01$ ; \*\*\*,  $P < 0.001$ ). See Fig. 4.

## Ontogeny of ascent activity

age	N	ascent speed (cm/s)
2-HAH	2	3.7±0.9
4-HAH	4	5.1±0.4
48-HAH	4	5.4±0.9
96-HAH	6	4.1±2.1
120-HAH	4	3.5±0.9
240-HAH	4	2.3±0.7

**Table S3.** Ascending speeds of sampled age groups.