

Categorizing visual information in subpopulations of honeybee mushroom body output neurons

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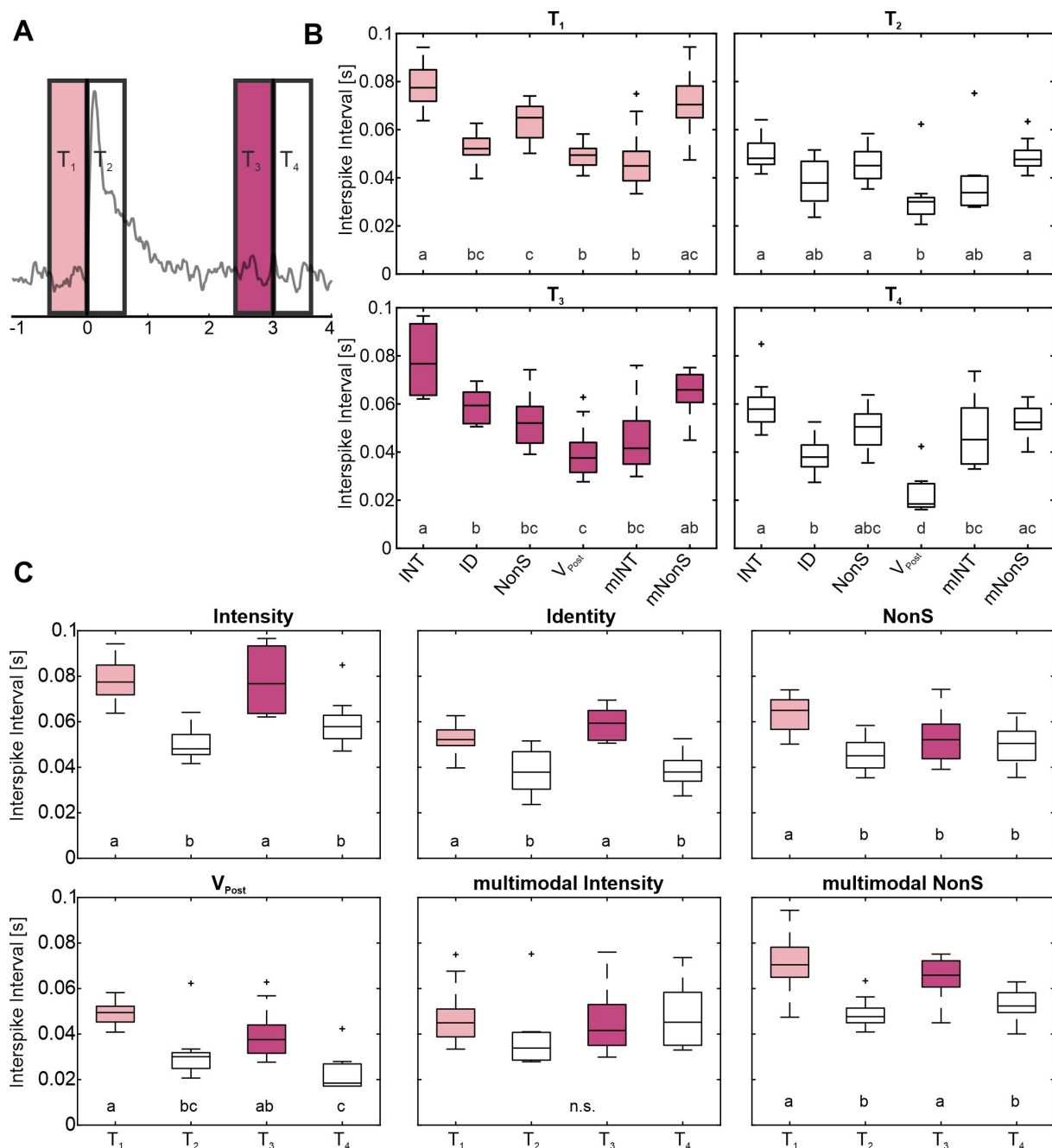


Figure S1. Interspike intervals of MBON subgroups. (A) Exemplary activity of one MBON. Boxes show four 500 ms time windows during which mean interspike intervals (ISI) are calculated: T₁: 500 ms

before stimulus on-set, T_2 : stimulus on-set, T_3 : 500 ms before stimulus off-set, T_4 : 500 ms after stimulus off-set. Stimulus starts at 0 s and lasts 3 s. (B) ISI are shown for all examined MBON subgroups at T_{1-4} (except multimodal Identity neurons, due to their little n-size). Same letters indicate shared variance levels groups (one-way ANOVA, post-hoc test: Tukey-Kramer, $p < 0.05$). (C) Group specific comparison of ISI at T_{1-4} (one-way ANOVA, post-hoc test: Tukey-Kramer, $p < 0.05$). Abbreviations: INT: Intensity, ID: Identity, NonS: Non-specific, V_{Post} : Visual post-stimulus active, mINT: Multimodal Intensity, mNonS: Multimodal NonS.

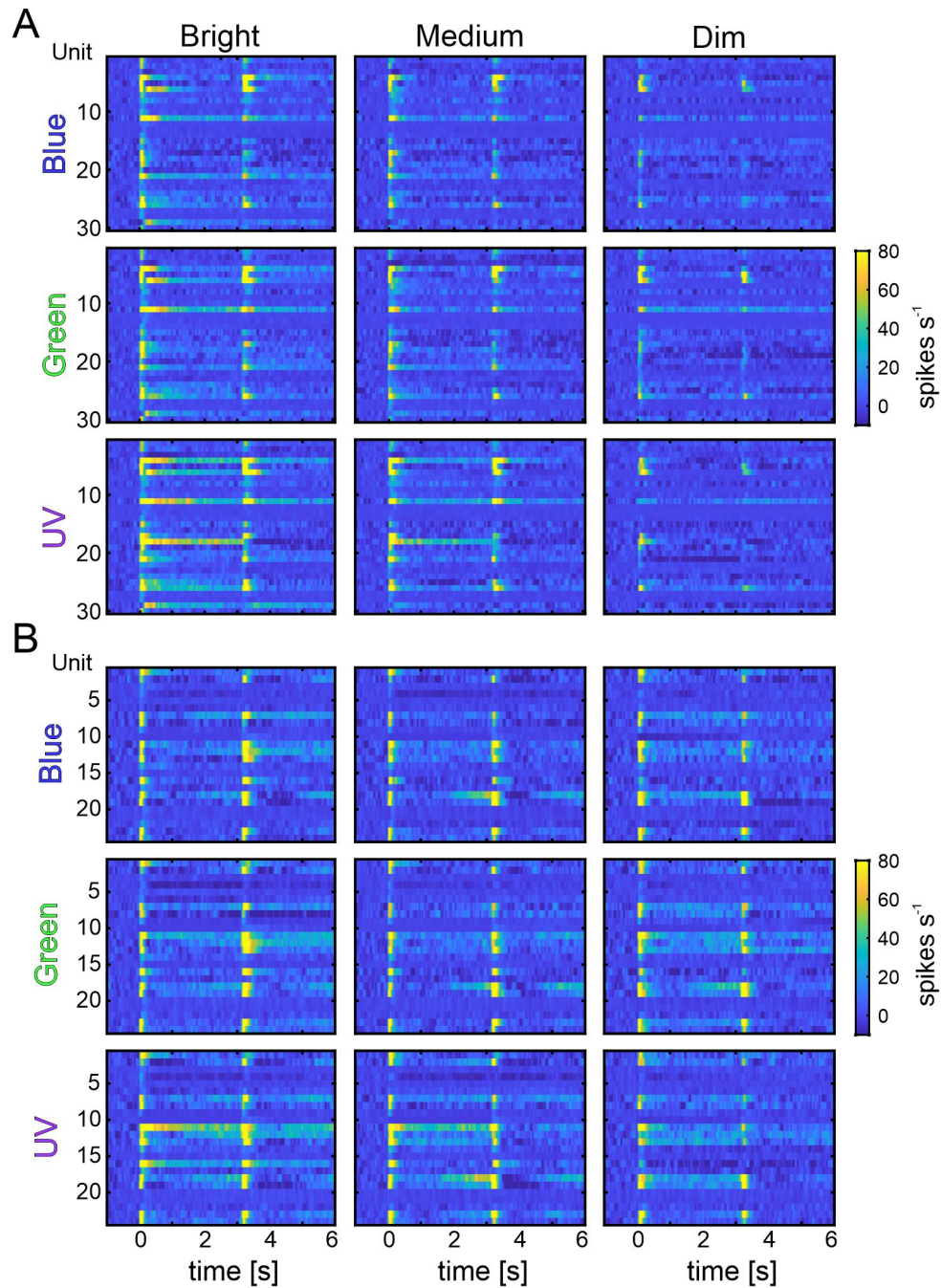


Figure S2. Neural activity of Intensity and Non-specific coding neurons (A) Population vectors of light induced activity of intensity coding MBONs (Rows: Wavelengths; Columns: Brightness). Each heat map shows activity of unimodal (first 24 units) and multimodal (units 25-30) intensity coding neurons. **(B)** Population vectors of light induced activity of non-specific coding MBONs, as explained in A. Each heat map shows activity of unimodal (first 13 units) and multimodal (units 14-24) non-specific coding neurons. Color bar indicates spike activity.

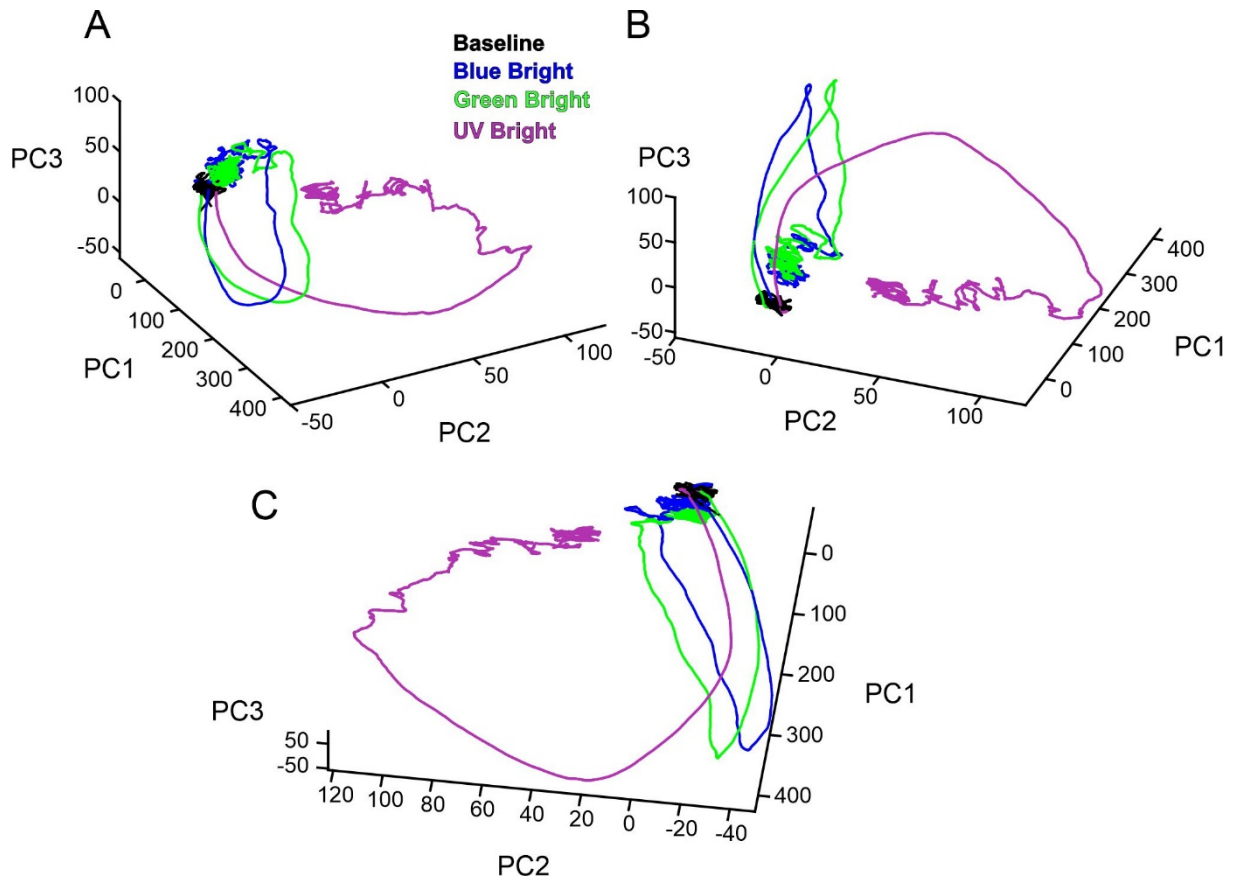


Figure S3. UV-light separation in the population response of unimodal, identity coding MBONs. Three visual perspectives (**A**, **B**, **C**) of the first 3 principal components (PC1, PC2 and PC3) after a Principal Component Analyses are shown. Baseline activity (black, 100 ms before stimulation) is followed by 3 seconds of light induced trajectories (blue bright (blue), green bright (green) and UV bright (magenta)). The prominent UV trajectory settled in a "fixed point" activity outlasting throughout the stimulation. This activity is clearly separated from blue & green, which in turn are exhibiting much closer trajectories. PC1, PC2 and PC3 account for 42 %, 17% and 9% of variation in the data respectively.