Evolutionary convergence in computation of local motion signals in monkey and dragonfly

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decision analysis in the primate visual cortex: implications for perception.

**Results**

Responses of individual neurons

- Macaques: optimized response of an easily-isolated neuron in the V1 area.
- Dragonflies: optimization of a more complex response pattern in the lobula area.

**Methods:**

- Single-unit recordings using multi-tetrode arrays were performed in awake monkeys and dragonflies.
- Local motion signals were presented using visual stimuli.

**Data Analysis:**

- Correlations between sensitivity to different motion cues were determined.
- Neural responses to different motion cues were compared across species.

**Visual stimuli:**

- A 12-point random-dot stimulus was used.
- Motion was presented as a sequence of random displacements.

**Directional Index (DI):**

- DI = \( \frac{-0.1}{0.1} \)

**Sensitivity to multiple kinds of motion across populations:**

- Neurons in both species were sensitive to multiple kinds of motion.

**Motion Processing Across Brain Areas:**

- Neurons in different brain areas showed different sensitivity to motion cues.

**Summary and Conclusions:**

- Despite extreme differences in evolutionary history and brain structure, macaques and dragonflies process motion cues similarly.

**Funding & References:**

- This research was supported by the National Eye Institute (U54 EY020482 and R01 EY025884) to J.D.V. and R.R.H.
- The authors thank the Foundation for Research Science and Technology (FRST) for a grant to J.D.V. and R.R.H.