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UNIVERSITÉ  
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# The Macaque Posterior Intraparietal (PIP) cluster

## Wide-field retinotopy reveals a new visuotopic cluster in IPS

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### I. Background

✓ PPC : end stage of the dorsal visual pathway. visuospatial / visuomotor

✓ Debated visuotopic organisation

Monkey:

PPC is marginally retinotopic: Areas CIP 1/2 between V3A and LIPvt (Arcaro et al. 2011)

Human:

Dense arrangement of abutting visuotopic maps in IPS (IPS0 - 5) (Kastner 2017)

✓ Inter-species differences

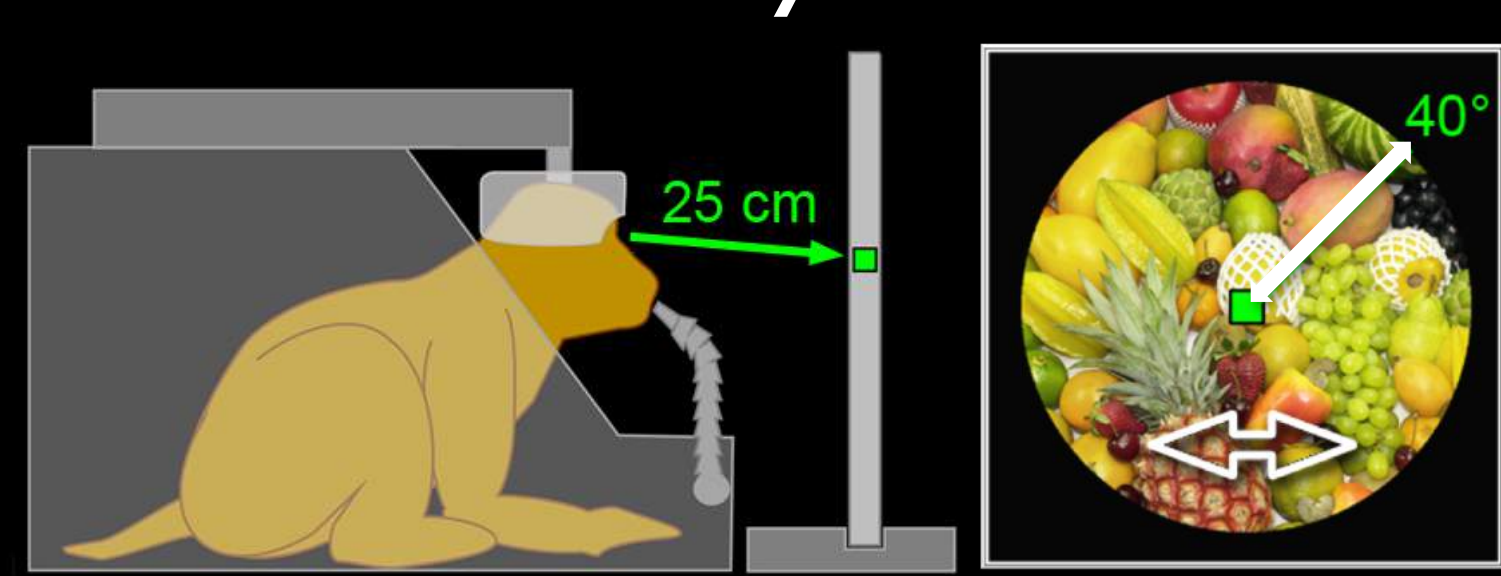
Use of tools?

Difference of method?

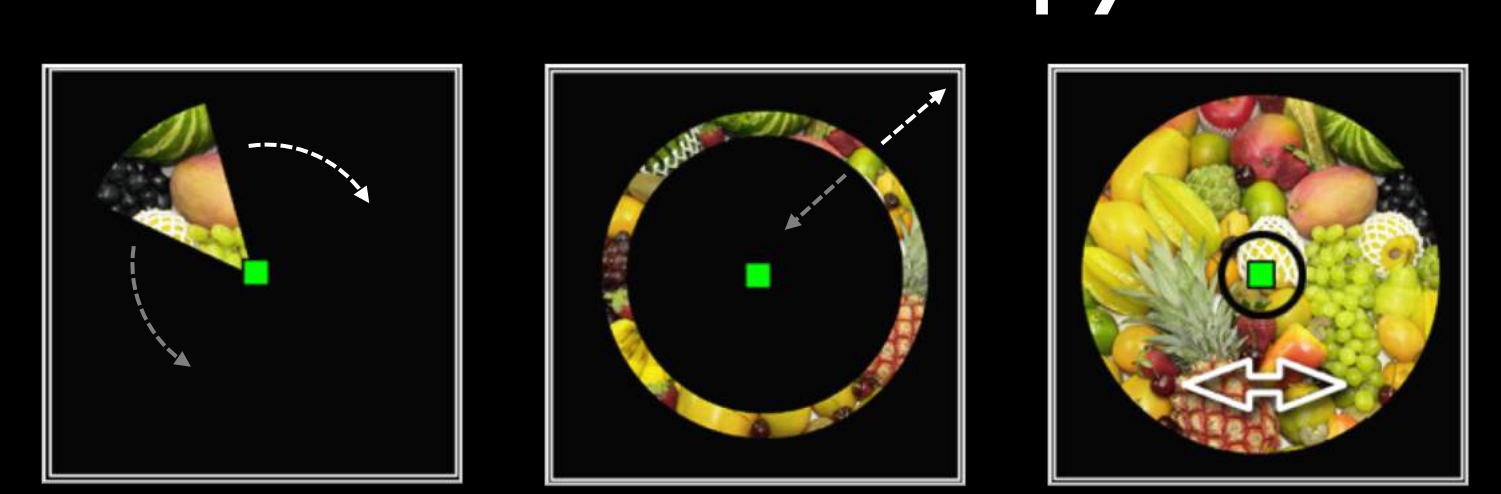
Invasive electrophysiology  
vs  
fMRI-based retinotopic mapping

### II. Methods

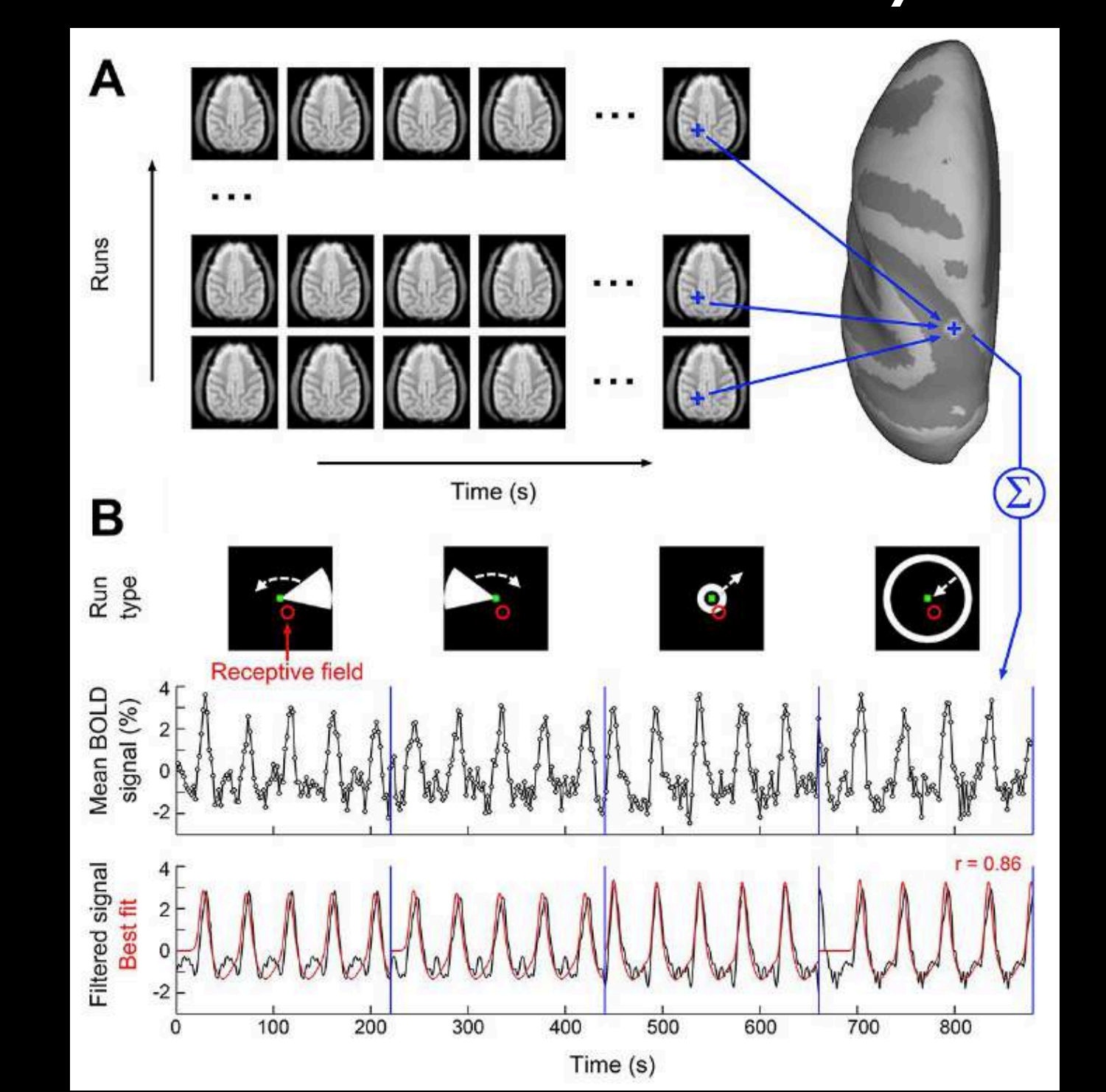
< Monkey fMRI >



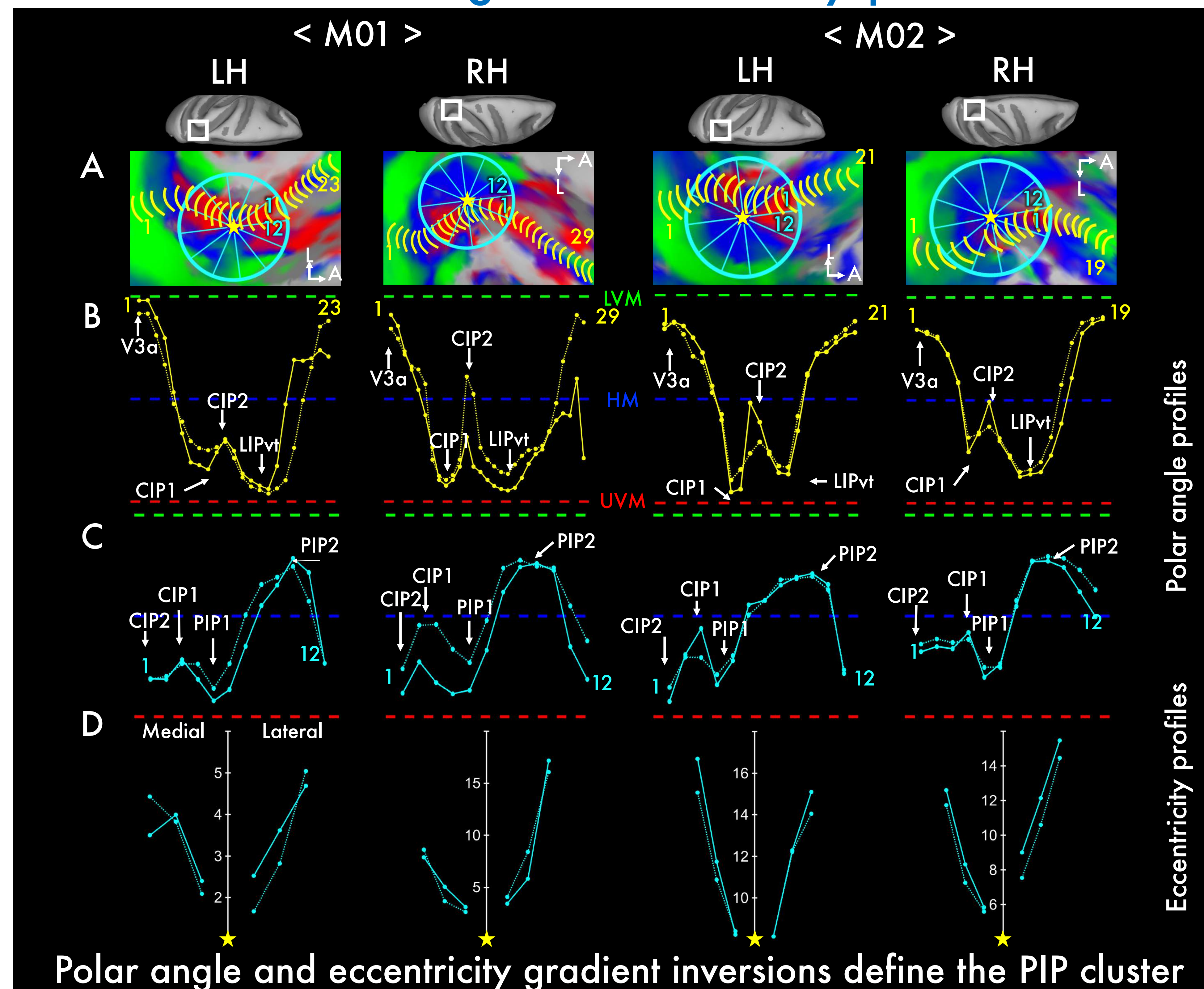
< Wide-field retinotopy WFR >



< Surface based PRF analysis >

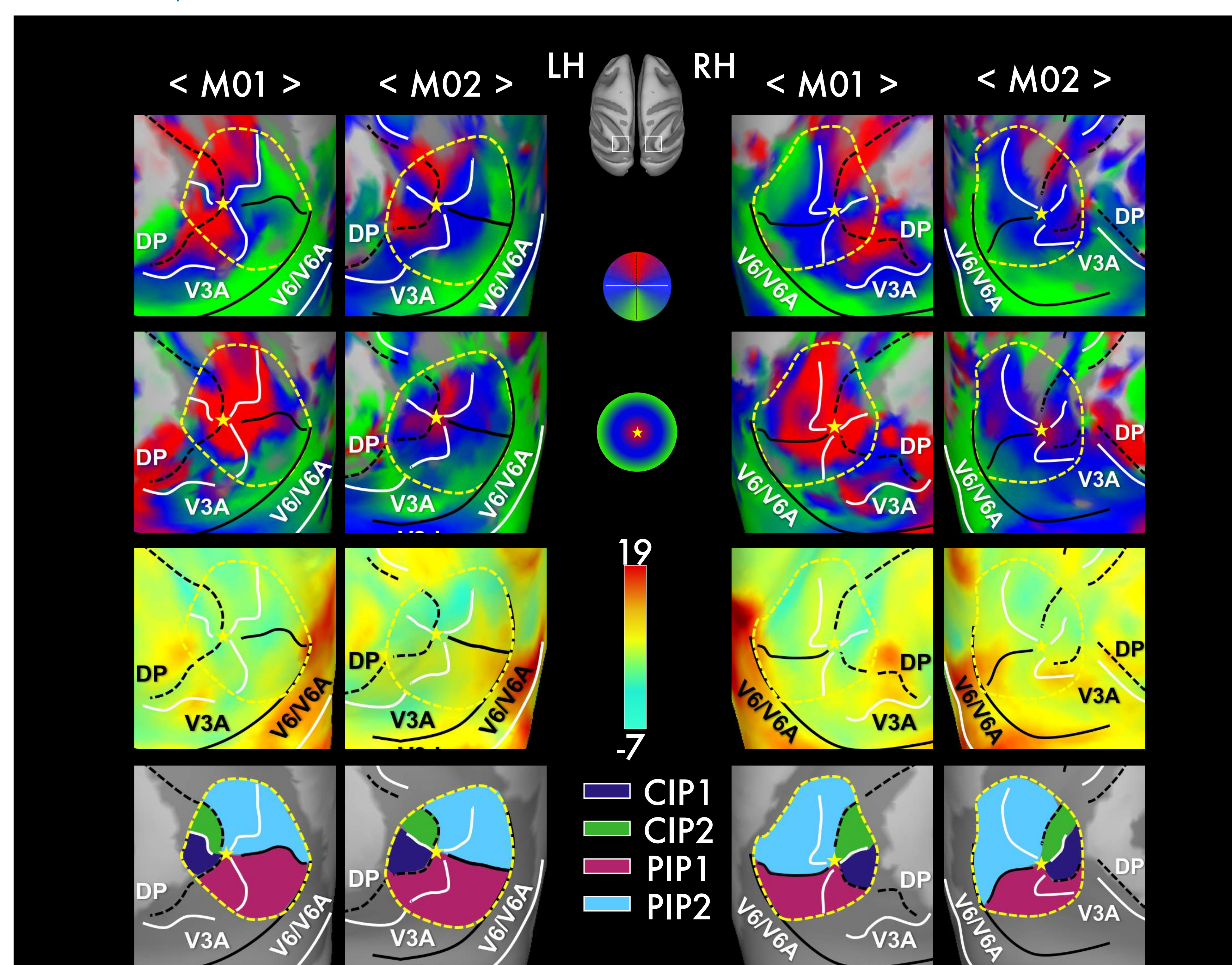


### IV. Polar angle & eccentricity profiles



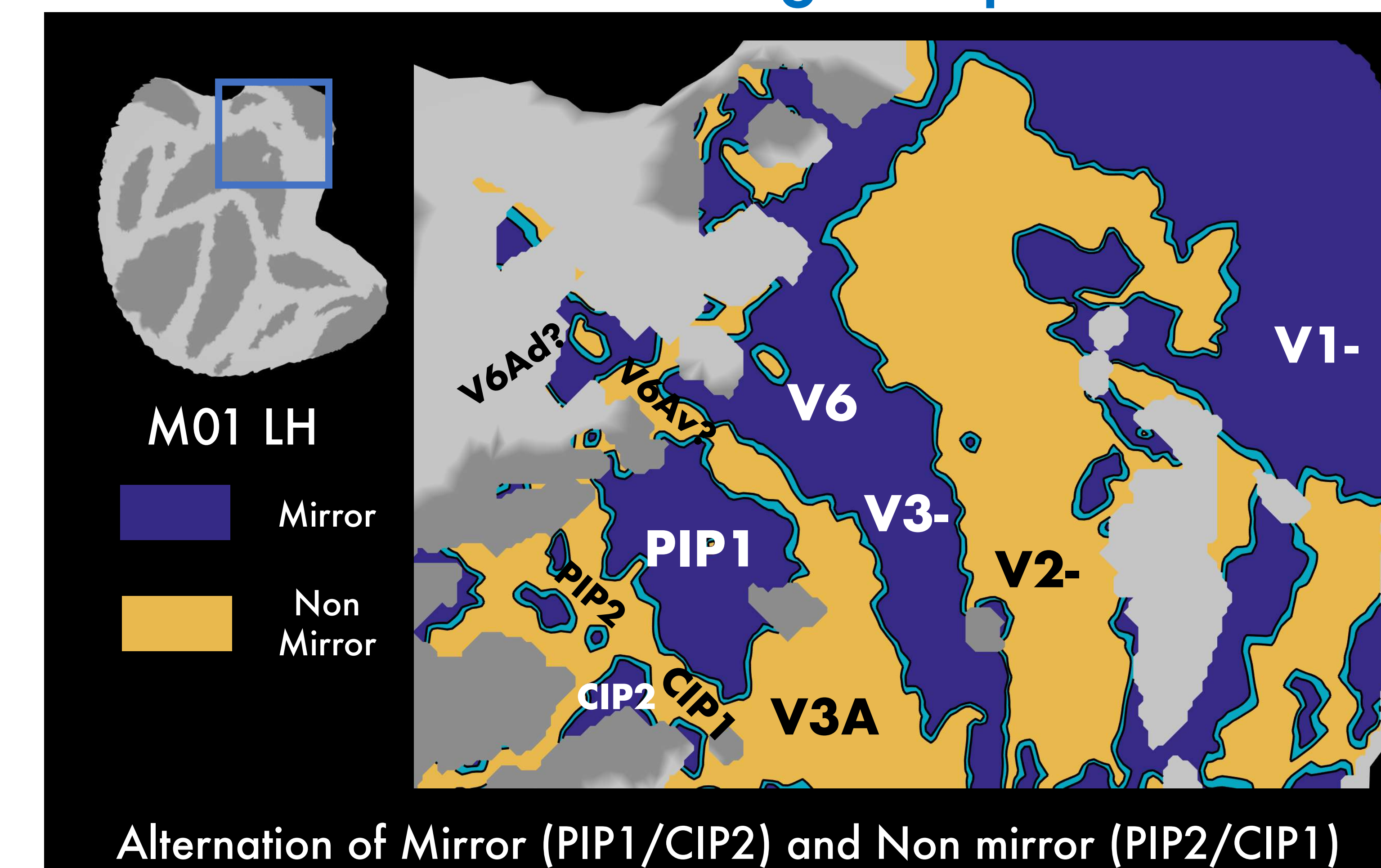
Polar angle and eccentricity gradient inversions define the PIP cluster

### V. Functional delineation of the PIP cluster

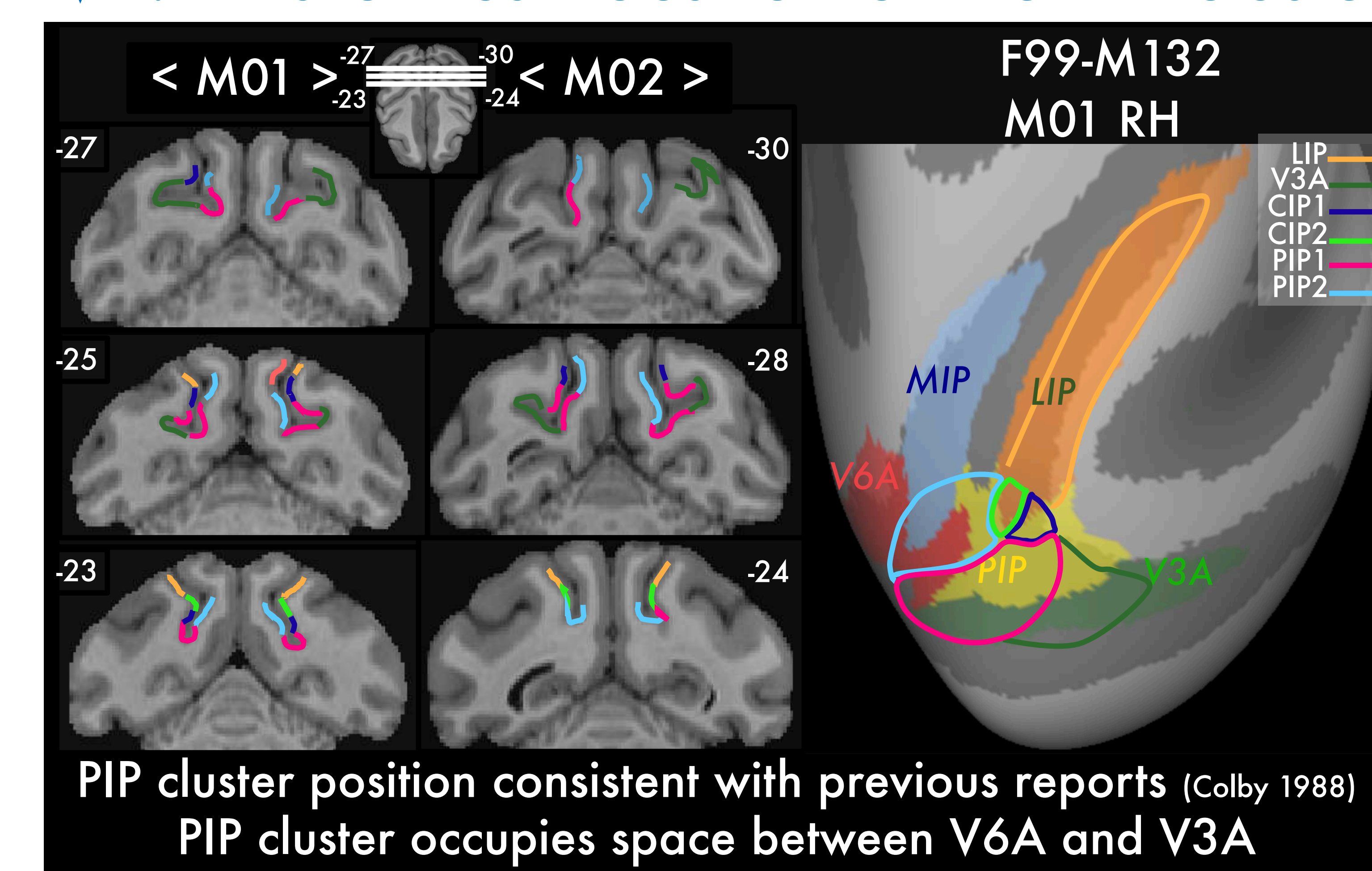


PIP cluster fovea lies near IPS fundus, extends across banks of IPS.  
PIP cluster is not motion sensitive

### VI. Field sign map



### VII. Anatomical location of the PIP cluster



PIP cluster position consistent with previous reports (Colby 1988)  
PIP cluster occupies space between V6A and V3A

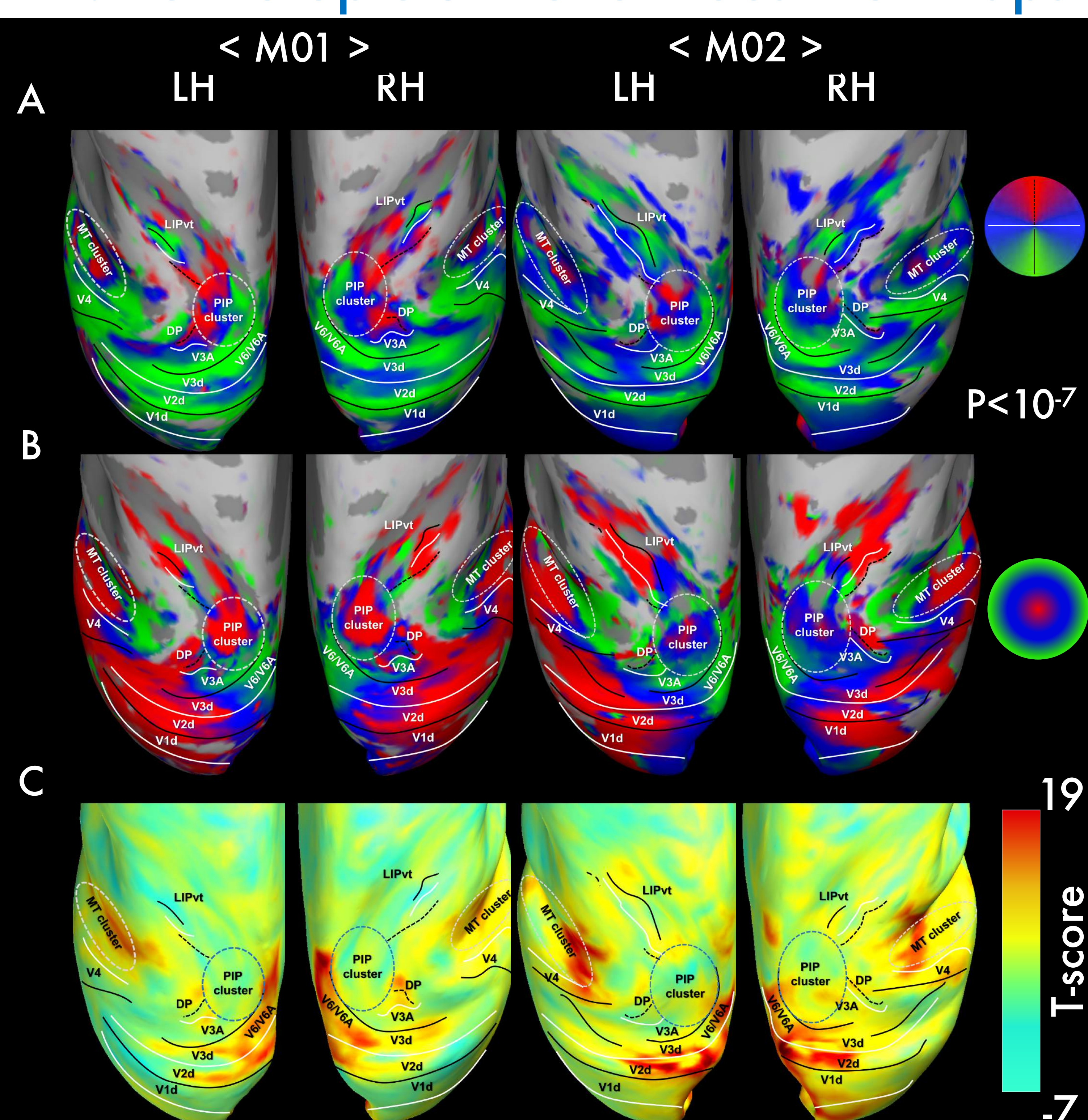
### VIII. Take home

- ✓ WFR + surface-based pRF = robust activations.
- ✓ CIP1/2 // mirror quarterfield, lateral IPS.
- ✓ PIP1/2 // mirror hemifield, medial IPS.
- ✓ Fovea of PIP cluster near IPS fundus, increasing eccentricity extending across banks. No motion sensitivity
- ✓ Alternation of Mirror (PIP1/CIP2) and Non mirror (PIP2/CIP1)
- ✓ PIP cluster is between V6A and V3A (Colby et al. 1988)

### IX. References

- ✓ Kastner S, Chen Q, Jeong SK, Mruczek REB (2017) Neuropsychologia A brief comparative review of primate posterior parietal cortex: A novel hypothesis on the human toolmaker. Neuropsychologia:0-1 Available at:
- ✓ Arcaro MJ, Pinsk MA, Li X, Kastner S (2011) Visuotopic organization of macaque posterior parietal cortex: a functional magnetic resonance imaging study. J Neurosci 31:2064-2078 Available at:
- ✓ Colby CL, Gattass R, Olson CR, Gross CG (1988) Topographical organization of cortical afferents to extrastriate visual area PO in the macaque: a dual tracer study. J Comp Neurol 269:392-413.

### III. Retinotopic & motion localizer maps



WFR + surface-based pRF = robust activations.