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Presentation Abstract

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Title: Driver and modulator inputs to the lateral posterior thalamic nucleus from medial agranular cortex and posterior parietal cortex in rats

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Abstract: In rats the lateral posterior thalamic nucleus (LP) plays a central role in the neural circuitry mediating directed attention and its dysfunctional counterpart, contralateral neglect. The key cortical components of this circuitry, medial agranular cortex (AGm) and posterior parietal cortex (PPC), have reciprocal connections with the medial portion of rostral LP, LPMR. Corticothalamic projections originate from layer VI in many cortical areas, and exert a modulatory influence on the activity of thalamic neurons. Corticothalamic projections originating in layer V are less common, and exert a driver influence on thalamic neurons. We made injections of the retrograde tracer cholera toxin subunit B in LPMR and assessed the distribution of labeled neurons in AGm and PPC. In both cortical areas labeled neurons were plentiful in layer VI and were present but less plentiful in layer Va. Within AGm, layer VI labeling was present throughout the rostrocaudal extent of AGm; layer Va labeling was densest in the rostral and middle portions of AGm. Within PPC, layer VI labeling was prominent in medial PPC, sparse in lateral PPC. Layer Va labeling was present in medial PPC but not in lateral PPC. The caudally adjacent visual association cortex (Oc2M) contained abundant labeled neurons in layer VI and moderate labeling in layer Va. These findings suggest that cortical areas AGm and PPC exert driver as well as modulatory role on neurons in LPMR. We suggest that this is an important

component of the circuitry mediating directed attention.

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