Abstract View

NEUROCHEMICAL DIVERSITY IN THE KONIOCELLULAR ELLS OF MACAQUE MONKEY LATERAL GENICULATE NUCLEUS (LGN).

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Primates possess three distinct visual pathways that project from the retina via separate layers of the LGN to primary visual cortex. The (K) pathway is the least well understood in part because K LGN cells have been difficult to identify. K cells cluster into thin layers below each of the main LGN layers. For convenience these K layers are numbered beginning closest to the optic tract with K1. Recent studies have shown that K cells possess unique neurochemical signatures and can be identified in a variety of primates with immunocytochemistry for the calcium binding protein, calbindin (CB). In macaque monkeys K LGN cells also contain the alpha isoform of type II calcium/calmodulin dependent protein kinase (α-CaMKII). We asked whether all K cells in macaque monkey contain both markers. K cells from matched areas of the LGNs of 4 monkeys were examined using both single and double-labeling methods to identify CB and α-CaMKII. Results reveal three neurochemical subclasses, a double-labeled population and two single-labeled populations. K layers also differed in the proportions of each sub-type. Percentages of double-labeled/α-CaMKII/CB cells for K1 were 63.9%/30.8%/5.3%., for K2 were 56%/28.5%/15.0% and for K3 were 60.5%/39.5%/0.0%. K cells in layers above K3 were so sparsely distributed that matched regions could not be evaluated. Even in layers K4-K6, however, all 3 subclasses of K cells were seen. These findings add to a growing body of data that together suggest that the K pathway is functionally heterogeneous.

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