that the mPFC plays a role in the maintenance but not in the initiation of this striatal behavior. The elucidation of the anatomical interactions in yawning may facilitate the differentiation of pre- and post-synaptic DA receptor and mediated movements in humans and animals.

100 CHEMICALLY-IDENTIFIED NEURAL CIRCUITRY OF PRIMATE PREFRONTAL CORTEX

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Although the prefrontal cortex has been implicated as a site of dysfunction in schizophrenia, relatively little is known about the intrinsic organization of neural circuits in the prefrontal cortex of primates. We have characterized the regional and laminar patterns of distribution of chemically-specific afferent, intrinsic and efferent systems in the prefrontal regions of cynomolgus monkeys. Dopaminergic (DA) axons, somatostatin (SS) interneurons, a subpopulation of pyramidal neurons that contain non-phosphorylated neurofilament proteins, and a morphologically-distinct subclass of corticotropin-releasing factor (CRF) interneurons have regional distributions that are quite similar. These four systems also have complimentary laminar distribution patterns. These findings suggest that DA afferents, SS interneurons and a subset of layer III pyramidal neurons may be components of a neural circuit. The output of these pyramidal neurons to other cortical regions may be regulated by layer IV CRF chandelier neurons whose axons synapse upon the initial axonal segment of the pyramidal neurons. Determination of the target neurons of DA projections to prefrontal cortex, and of the synaptic relationships of these neurons with other elements of prefrontal cortex, may reveal identifiable, distinct populations of cortical neurons that could be dysfunctional in schizophrenia.

101 THE NORADRENERGIC INNERVATION OF MONKEY PREFRONTAL CORTEX

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The distribution of dopamine-beta-hydroxylase (DBH) immunoreactive (IR) fibers was characterized in prefrontal cortical regions of cynomolgus monkeys. The density of DBH-IR fibers was heterogeneous, both across and within cortical cytoarchitectonic regions. For example, fiber density was greatest in area 8B; within this region, the medial surface had a greater density of labeled processes than the dorsal surface. Areas 9 and 24 also had a high density of DBH-IR fibers, areas 11, 12, 13 and 25 were of intermediate density, and areas 10 and 46 had the lowest density of labeled fibers. Despite these regional variations in density, the laminar distribution of labeled fibers was very similar across areas. Fiber density was relatively low in layers I–IV, increased substantially in layer V, and was intermediate in layer VI. Since other data indicate that anti-DBH selectively labels noradrenergic axons in monkey neocortex, the distinctive innervation patterns exhibited by DBH-IR fibers suggest the regions and layers that may be the principal sites of action of norepinephrine in exerting its effects on prefrontal cortical function. These findings may also reveal the relationship of noradrenergic axons to other elements of prefrontal cortical circuitry, such as dopaminergic