Targeting Topics: Recent Scientific References

(continued from page 3)

in four injections. A complex learning task, the Hebb-Williams maze, was used to define small deficits in the learning performance of the lesioned animals prior to, and after the injection of scopolamine.

Basomedial hypothalamic injections of neuropeptide Y conjugated to saporin selectively disrupt hypothalamic controls of food intake.

Bugarith K, Dinh TT, Li AJ, Speth RC, Ritter S

Endocrinology 146(3):1179-1191, 2005

Neurons in the arcuate nucleus (ARC) that coexpress neuropeptide-Y (NPY) and Agouti gene-related protein may be involved in glucoprivic feeding. The authors investigated the use of NPY-SAP (Cat. #IT-28) to eliminate neurons expressing NPY receptors. Bilateral injections of 48 ng of NPY-SAP were made into the basomedial hypothalamus dorsal to the ARC in rats. While the NPY-SAP lesions impaired responses to leptin and ghrelin, the data do not support the role of NPY/AGRP neurons as mediators of glucoprivic feeding.

Sexually dimorphic effects of hippocampal cholinergic deafferentation in rats.

Jonasson Z, Cahill JF, Tobey RE, Baxter MG

Eur J Neurosci 20(11):3041-3053, 2004

Studies of cholinergic neuron lesions have been performed almost exclusively in male animals. In this work, the authors examined the differences of cholinergic lesions between males and females. Rats were treated with four injections totaling 0.15 µg of 192-Saporin (Cat. #IT-01) into the medial septum/vertical limb of the diagonal band. The results demonstrate differences in learning and memory processes between male and female rats.

Effects of lesions of the histaminergic tuberomammillary nucleus on spontaneous sleep in rats.

Gerashchenko D, Chou TC, Blanco-Centurion CA, Saper CB, Shiromani PJ

Sleep 27(7):1275-1281, 2004

Although evidence suggests that histaminergic neurons in the tuberomammillary nucleus (TMN) promote wakefulness, this has not been investigated using specific lesioning agents. In this study, the authors utilize the fact that TMN neurons express the orexin-B receptor by eliminating these neurons with an injection of 50 ng of orexin-SAP (Cat. #IT-20) into the posterior hypothalamus. The data indicate that histaminergic neurons are not required for the homeostatic regulation of sleep.

Impairment of skilled forelimb use after ablation of striatal interneurons expressing substance P receptors in rats: an analysis using a pasta matrix reaching task.

Chiken S, Tokuno H

Exp Brain Res 2005 Mar 8; [Epub]

The substance P receptor is expressed by two types of interneurons in the striatum. The authors investigated whether elimination of these neurons would impair motor control by the basal ganglia. Rats were treated with 7.5 ng injections of SP-SAP (Cat. #IT-07) into the dorsolateral part of the striatum. Lesioned animals did not perform as well as controls in a test measuring accurate reaching with the forepaw. The data show that striatal interneurons expressing the substance P receptor are necessary for accurate reaching.

Aging and cholinergic deafferentation alter GluR1 expression in rat frontal cortex.

Kim I, Wilson RE, Wellman CL

Neurobiol Aging 26(7):1073-1081, 2005

Neuronal plasticity is involved in several processes during adulthood, including learning and memory, and recovery from injury. Recent evidence suggests that aging reduces this plasticity. The authors used 0.15 µg injections of 192-Saporin (Cat. #IT-01) into the nucleus basalis magnocellularis of rats to investigate how the loss of cortical plasticity would affect the expression of GluR1. Younger animals displayed a marked increase in the number of GluR1-expressing neurons, a compensatory response not seen in older animals.

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