Targeting Topics: Recent Scientific References

(continued from page 3)

Selective Loss of Cholinergic Neurons Projecting to the Olfactory System Increases Perceptual Generalization Between Similar, but Not Dissimilar, Odorants

Linster C, Garcia PA, Hasselmo ME, Baxter MG
Behav Neurosci 115(4):826-833, 2001.

Selective cholinergic lesioning of the basal forebrain has been linked to attentional and cognitive deficits. 192-Saporin (Cat. #IT-01) was administered to the horizontal limb of the diagonal band of Broca (0.3 µl at 0.175 µg/µl in each hemisphere) destroying projections to the olfactory bulb and cortex. The results demonstrate cholinergic lesions affect the perceptual qualities of odors, and may possibly represent a general mechanism for cholinergic effects on information processing.

Contribution of the Cholinergic Basal Forebrain to Proactive Interference from Stored Odor Memories During Associative Learning in Rats

de Rosa E, Hasselmo ME, Baxter MG
Behav Neurosci 115(2):314-327, 2001.

Proactive interference (PI) is the damaging effect of previously learned information on the acquisition of new, related information. Human patients with basal forebrain (BF) damage due to aneurysms are sensitive to PI. The authors administered 192-Saporin (Cat. #IT-01) to the horizontal limb of the diagonal band of Broca (two 0.2-µl injections of 0.175 µg/µl in each hemisphere) in rats and evaluated performance in an olfactory discrimination task. The treated rats had more difficulty acquiring an overlapping odor pair when muscarinic receptors were blocked by scopalomine. These results indicate that cholinergic neurons have a role in the modulation of PI in associative learning.

It's enough to raise your blood pressure!

Deuchars J, Deuchars S
Trends Neurosci 24(4):200, 2001.

The authors review studies completed by Schreihofer and Guyenet using anti-DBH-SAP (Cat. #IT-03) to eliminate C1 adrenergic neurons. The results show that, although C1 neurons play a role in some sympathoexcitatory responses, they are probably not responsible for maintaining sympathetic tone.

Effects of selective immunotoxic lesions on learning and memory.

Baxter MG
Methods Mol Biol 166:249-265, 2001

Dr. Baxter presents a brief review of studies using immunotoxins to study learning and memory. In particular, this chapter (from the book entitled "Immunotoxin Methods and Protocols") focuses on the use of 192-Saporin (Cat. #IT-01) for elimination of basal forebrain cholinergic neurons and cerebellar Purkinje cells.

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Distribution and Co-Localization of Choline Acetyltransferase and p75 Neurotrophin Receptors in the Sheep Basal Forebrain: Implications for the Use of a Specific Cholinergic Immunotoxin

Ferreira G, Meurisse M, Tillet Y, Lévy F
Neurosci 104(2):419-439, 2001.

ME20.4 is a monoclonal antibody (Cat. #AB-N07) that has been shown to bind the p75 receptor in rabbit, sheep, dog, cat, raccoon, pig, and several primate species. Ferreira *et al.* investigate ME20.4-SAP (bilateral, 150 µl per ventricle, 50-150 µg total; Cat. #IT-15) use in sheep to assess distribution and localization of p75. The authors demonstrate 80-95% loss of basal forebrain cholinergic neurons and acetylcholinesterase-positive fibers in the hippocampus, olfactory bulb, and entorhinal cortex.

Hypocretin-2-Saporin Lesions of the Lateral Hypothalamus Produce Narcoleptic-Like Sleep Behavior in the Rat

Gerashchenko D, Kohls MD, Greco M, Waleh NS, Salin-Pascual R, Kilduff TS, Lappi DA, Shiromani PJ
J Neurosci 21(18):7273-7283, 2001.

Orexin (also knows as hypocretin) peptides are produced exclusively by neurons in the lateral hypothalamus, however non-specific lesioning in this region has not produced narcoleptic-like sleep. Gerashchenko *et al.* use orexin-SAP (490 ng/0.5 µl; Cat. # IT-20) to specifically eliminate orexin neurons in rats. The treated rats displayed several sleep disturbances found in narcolepsy, including increased slow-wave sleep, and sleep-onset REM sleep periods. The data suggest that orexin-SAP can be used to create a model for narcolepsy in rats (see page 7, Featured Products).