Targeting Topics: Recent Scientific References

(continued from page 3)

A double dissociation between serial reaction time and radial maze performance in rats subjected to 192 IgG-saporin lesions of the nucleus basalis and/or the septal region.

Lehmann O, Grottick AJ, Cassel JC, Higgins GA
Eur J Neurosci. 18(3):651-666, 2003

Using 0.4-µl injections containing 0.4 µg of 192-Saporin (Cat. #IT-01) into either the nucleus basalis magnocellularis, the medial septum/vertical limb of the diagonal band of Broca, or both, the authors examined the contributions of the p75 receptor-positive neurons on cognitive function in rats. Data indicate there is a functional dissociation between the two pathways in attention and memory.

Neonatal 192 IgG-saporin lesion of forebrain cholinergic neurons: focus on the life span?

Pappas BA, Sherren N
Neurosci Biobehav Rev 27(4):365-376, 2003

In this review, the authors discuss the use of 192-Saporin in the investigation of neurodevelopmental disorders, and propose that the effects of these lesions are amplified as the animal ages and experiences normal age-related synapse loss.

Hilar neuropeptide Y interneuron loss in the aged rat hippocampal formation.

Cadiacio CL, Milner TA, Gallagher M, Pierce JP
Exp Neurol 183(1):147-158, 2003

The authors investigate the loss of neuropeptide Y-immunoreactive (NPY-I) interneurons in the dentate gyrus of aged rats. Their results show a loss of a select group of interneurons in these animals. The behavioral as well as structural changes correlated with the results of previous studies on young rats treated with 192-Saporin (Cat. #IT-01). NPY-I neurons may therefore be affected by age-related losses of cholinergic neurons in the basal forebrain.

The role of the septo-hippocampal cholinergic projection in T-maze rewarded alternation.

Kirby BP, Rawlins JN
Behav Brain Res 143(1):41-48, 2003

192-Saporin (Cat. #IT-01) has been used extensively to lesion cholinergic projections to the medial septum from the hippocampal region. It is not yet clear how post-lesion neural regeneration may affect the results. The authors used four 50-ng injections of 192-Saporin to investigate effects prior to any suspected neural regeneration. Significant microglia activation, loss of hippocampal acetylcholinesterase, and a clear inflammatory response were observed; but there was no impairment of spatial working memory.

Lesions of the basal forebrain cholinergic system impair task acquisition and abolish cortical plasticity associated with motor skill learning.

Conner JM, Culberson A, Packowski C, Chiba AA, Tuszynski MH
Neuron 38(5):819-829, 2003

Neuronal plasticity has been associated with normal learning. The authors wished to investigate the role of the cholinergic basal forebrain (CBF) system in learning motor skills. Rats received bilateral 95-ng injections of 192-Saporin (Cat. #IT-01) in either the medial septum, the nucleus basalis magnocellularis, or both. The results indicate that lesioned animals, with many aspects of attention still preserved, are unable to adapt attention to meet the demands of a particular task. The authors conclude that the CBF system may be implicated in learning forms that require plasticity of cortical representations.

Enhanced evoked excitatory transmitter release in experimental neuropathy requires descending facilitation.

Gardell LR, Vanderah TW, Gardell SE, Wang R, Ossipov MH, Lai J, Porreca F.
J Neurosci 23(23):8370-8379, 2003

The authors examine whether afferent discharge produced by nerve injury and central changes in experimental neuropathic pain might interact at the spinal level. Rats were treated with 48 ng of dermorphin-SAP (Cat. #IT-12) and various markers for neuropathic pain were evaluated. The results link several consequences of the post-injury state, including support for increased afferent input as a driving force for neuropathic pain.