Targeting Topics: Recent Scientific References

(continued from page 3)

Selective lesion of septal cholinergic neurons in rats impairs acquisition of a delayed matching to position T-maze task by delaying the shift from a response to a place strategy

Fitz NF, Gibbs RB, Johnson DA
Brain Res Bull 77(6):356-360, 2008.

It has been theorized that the effect of cholinergic lesions of the medial septum on learning depend on the stressful nature of the task being learned. The authors injected 0.2 μg of 192-IgG-SAP (Cat. #IT-01) into the medial septum of rats, then examined the strategies used by these animals to learn a delayed matching to position T-maze task. Lesioned animals were less able to switch from one strategy to another, indicating that this mechanism is the primary one affected by septal cholinergic lesions.

Selective lesion of medial septal cholinergic neurons followed by a mini-stroke impairs spatial learning in rats

Craig LA, Hong NS, Kopp J, McDonald RJ
Exp Brain Res [Epub Oct 21], 2008.

Recent work has suggested that reduced levels of acetylcholine, seen in Alzheimer's disease patients, increases the susceptibility of hippocampal neurons to future challenges. Rats received two injections totaling 7.5 ng of 192-IgG-SAP (Cat. #IT-01) into the medial septum/vertical limb of the diagonal band of Broca. The vasoconstrictor endothelin-1 was used to create small localized strokes in the hippocampus of lesioned animals. The data suggest that loss of these hippocampal neurons compromises functional recovery from stroke.

Please visit www.ATSbio.com to see a complete list of references.

Descending facilitation from the brainstem determines behavioural and neuronal hypersensitivity following nerve injury and efficacy of pregabalin

Bee LA, Dickenson AH
Pain 140(1):209-223, 2008.

Rostral ventromedial medulla (RVM) facilitatory On cells are thought to be involved in the mechanisms that control chronic pain. Dermorphin-SAP (Cat. #IT-12, 3 pmol) injected into the RVM of rats was used to examine how mu-opioid receptor-expressing facilitatory cells fit into this circuit. Saporin (Cat. #PR-01) was used as a control. The results show that activity in the RVM may influence the outcome of nerve injury.

The role of cholinergic basal forebrain neurons in adenosine-mediated homeostatic control of sleep: lessons from 192 IgG-saporin lesions

Kalinchuk AV, McCarley RW, Stenberg D, Porkka-Heiskanen T, Basheer R
Neuroscience 157(1):238-253, 2008.

The level of adenosine in the basal forebrain increases during sleep deprivation (SD). The cholinergic system of the basal forebrain is thought to be involved in the control of this process. 0.23 μg of 192-IgG-SAP (Cat. #IT-01) was injected into the horizontal diagonal band/ substantia innominata/ magnocellular preoptic nucleus, or 6 μg into the lateral ventricle of rats. The time course was dependent on the injection site, but eventually the SD-induced increase in adenosine was virtually eliminated.

Cholinergic depletion of the medial septum followed by phase shifting does not impair memory or rest-activity rhythms measured under standard light/dark conditions in rats

Craig LA, Hong NS, Kopp J, McDonald RJ
Brain Res Bull [Epub Nov 24], 2008.

It has been theorized that cognitive decline observed in Alzheimer's disease is in part due to disruption of the circadian rhythm (CR) in these patients. Some basal forebrain cholinergic neurons project to the suprachiasmatic nucleus, which is responsible for maintenance of CR. Rats received two injections totaling 7.5 ng of 192-IgG-SAP (Cat. #IT-01) into the medial septum/diagonal band of Broca. Lesioned animals did not show any evidence of CR disruption.

Targeted destruction of photosensitive retinal ganglion cells with a saporin conjugate alters the effects of light on mouse circadian rhythms

Goz D, Studholme K, Lappi DA, Rollag MD, Provencio I, Morin LP
PLoS ONE 3(9):e3153, 2008.

Retinal ganglion cells expressing melanopsin photopigment are thought to be involved in non-image forming visual responses to light. The authors had a custom conjugate made between saporin and an anti-melanopsin antibody. A 400-ng injection of the melanopsin-SAP (now available as Cat. #IT-44) conjugate into the eye of a mouse resulted in a loss of the targeted cells. Rabbit IgG-SAP (Cat. #IT-35) was used as a control. The data indicates that melanopsin-containing cells are involved in the response to certain non-image forming visual input.