Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

Modulation of photic resetting in rats by lesions of projections to the suprachiasmatic nuclei expressing p75 neurotrophin receptor.

Erhardt C, Galani R, Jeltsch H, Cassel JC, Klosen P, Menet JS, Pevet P, Challet E
Eur J Neurosci 19(7):1773-1788, 2004

The circadian clock in mammals is located within suprachiasmatic nuclei of the hypothalamus (SCN). The authors investigated how cholinergic afferents from the basal forebrain may be involved in control of the circadian clock. 3 µg of 192-Saporin (Cat. #IT-01) was injected intracerebroventricularly, or 1 µg was injected in SCN of rats, and various aspects of the circadian system were investigated. The data suggest that the forebrain cholinergic system is involved in the phase resetting properties of light.

Cortical cholinergic function and deficits in visual attentional performance in rats following 192 IgG-Saporin-induced lesions of the medial prefrontal cortex.

Dalley JW, Theobald DE, Bouger P, Chudasama Y, Cardinal RN, Robbins TW
Cereb Cortex Apr 14, 2004

Prior work has demonstrated that lesions of the cortical cholinergic system of the basal forebrain impair performance in attentional tasks. The authors examined the effects of selective depletion of acetylcholine from the prefrontal cortex (PFC) on these same attentional tasks. 50 or 100 ng of 192-Saporin (Cat. #IT-01) was infused into the PFC of rats. Treated animals displayed deficits in specific aspects of the attentional tasks, indicating a modulatory role in PFC function by basal forebrain cholinergic neurons.

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Involvement of cholinergic neuronal systems in intravenous cocaine self-administration.

Smith JE, Co C, Yin X, Sizemore GM, Liguori A, Johnson WE 3rd, Martin TJ
Neurosci Biobehav Rev 27(8):841-850, 2004

Recent studies have demonstrated that cholinergic neurons take part in the process of cocaine self-administration. In this study the authors used 0.25 µg-injections of 192-Saporin (Cat. #IT-01) into the posterior nucleus accumbens (Nacc)-ventral pallidum (VP) region of rats to identify specific subsets of cholinergic neurons that are involved. The results indicate that cholinergic innervations of the VP, the medial septum/diagonal band of Broca, and the Nacc are inhibitory to the underlying processes of cocaine self-administration.

Altered neurotrophin receptor function in the developing prefrontal cortex leads to adult-onset dopaminergic hyperresponsivity and impaired prepulse inhibition of acoustic startle.

Rajakumar N, Leung LS, Ma J, Rajakumar B, Rushlow W
Biol Psychiatry 55(8):797-803, 2004

Neurodevelopmental abnormalities are suspected to play a role in the pathogenesis of schizophrenia. The authors injected 0.75 µl of 192-Saporin (Cat. #IT-01) bilaterally into the prefrontal cortex of postnatal day 1 rats. The rats were then evaluated in tests designed to measure behavioral abnormalities relevant to schizophrenia. The behavior of the treated animals indicated that damage to p75-receptor-expressing neurons in the prefrontal cortex may be involved in the manifestation of schizophrenia.

Spinal neurons involved in the generation of at-level pain following spinal injury in the rat.

Yezierski RP, Yu CG, Mantyh PW, Vierck CJ, Lappi DA
Neurosci Lett 361(1-3):232-236, 2004

The elimination of substance P receptor-expressing neurons in lamina I of the spinal cord using SSP-SAP (Cat. #IT-11) has been shown to reduce behavior associated with chronic pain. The authors investigated the effects of 150 or 300 ng SSP-SAP treatment during or after intraspinal administration of quisqualic acid in rats. Both treatments resulted in a reduction of pain-associated behavior. These results demonstrate that pain following spinal cord injury involves a population of spinal neurons expressing the substance P receptor.

Effects of hypocretin2-saporin and antidopamine-beta-hydroxylase-saporin neurotoxic lesions of the dorsolateral pons on sleep and muscle tone.

Blanco-Centurion C, Gerashchenko D, Salin-Pascual RJ, Shiromani PJ
Eur J Neurosci 19(10):2741-2752, 2004

Narcolepsy is linked to the loss of orexin (or hypocretin)-containing neurons in the brain. These neurons are located in the perifornical region of the posterior hypothalamus and innervate the locus coeruleus (LC). To investigate the role of the LC in sleep the authors injected 0.3 µl of 192-Saporin (Cat. IT-01) or anti-DBH-SAP (Cat. #IT-03) at 1 µg/µl. They

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