

Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

Elimination of neurokinin-1 receptor neurons in caudal nucleus reverses the effects of systemic bicuculline on c-Fos expression in rat trigeminal sensory nucleus: I. High intensity electrical stimulation of the trigeminal ganglion.

Abe T, Ohshita N, Sugiyo S, Moritani M, Kobayashi M, Takemura M

Neuroscience 133(3):739-747, 2005.

The authors investigated the role of NK-1r + neurons in lamina I of the trigeminal caudal nucleus (Vc) for orofacial nociception. After a 5 μ l injection of 5 μ M SP-SAP (Cat. #IT-07) into the cisterna magna, c-fos expression in the Vc was evaluated. SP-SAP treatment, along with use of bicuculline, a GABAA receptor antagonist, showed that NK-1r+ neurons in laminae I and III of the Vc are involved in nociceptive processing in the trigeminal sensory nucleus.

Selective cholinergic immunolesioning affects synaptic plasticity in developing visual cortex.

Kuczewski N, Aztiria E, Leanza G, Domenici L

Eur J Neurosci 21(7):1807-1814, 2005.

In this study the authors examined the role of subcortical cholinergic inputs in the regulation of plastic events in the visual cortex during early postnatal development. Four-day-old mouse pups were treated with a total of 0.4 μ g of 192-Saporin (Cat. #IT-01), using bilateral injections. Analysis of muscarinic receptor mRNA, long-term potentiation of cortex slices, and theta burst stimulation indicated that synaptic transmission and plasticity of the developing visual cortex depends on cholinergic input.

Autonomic brainstem nuclei are linked to the hippocampus.

Castle M, Comoli E, Loewy AD

Neuroscience 134(2):657-669, 2005.

Stimulation of the vagal nerve has been reported to enhance memory, as well as

be an effective treatment for epilepsy. The authors examined the underlying synaptic pathway. The right ventral CA1 hippocampal field of rats was lesioned with 42 ng of either anti-DBH-SAP (Cat. #IT-03), or 192-Saporin (Cat. #IT-01). The results indicate that both noradrenergic and cholinergic neurons are relay sites for this pathway.



Possible role of CRF peptides in burn-induced hypermetabolism.

Chance WT, Dayal R, Friend LA, Sheriff S
Life Sci [Aug 23 Epub], 2005.

Burn trauma has been associated with hypermetabolism and anorexia. Corticotropin releasing factor (CRF) elevates metabolic rate and elicits anorexia, while neuropeptide Y (NPY) reduces metabolic rate while stimulating feeding. After burn treatment, rats were injected with 2.5 μ g CRF-SAP (Cat. #IT-13) into the third ventricle. Several parameters, including resting energy expenditure, NPY concentrations in the paraventricular nucleus, and CRFr-2 density were evaluated post-treatment. The results indicate that the CRFr-2 is important in maintaining hypermetabolism resulting from burn trauma.

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Septal innervation regulates the function of alpha7 nicotinic receptors in CA1 hippocampal interneurons.

Thinschmidt JS, Frazier CJ, King MA, Meyer EM, Papke RL

Exp Neurol 195(2):342-352, 2005.

The authors examined whether hippocampal innervation by medial septum/diagonal band of Broca projections is necessary for normal α 7 receptor function. 1 μ g of 192-Saporin (Cat. #IT-01) was injected into the medial septum of rats. Various methods, including whole-cell patch clamping and immunohistochemistry, were used to evaluate the effects of these lesions. Lesioning with 192-Saporin did not affect α 7 receptor currents, indicating that cholinergic neurons are not linked to α 7 function.

Compensatory changes in cortical cholinergic innervation in the rat following an immunotoxic lesion.

Hartonian I, de Lacalle S

Restor Neurol Neurosci 23(2):87-96, 2005.

The ability of damaged axons to grow and functionally reinnervate damaged areas of the brain is well documented. Here the authors study this process in the context of rats lesioned with 192-Saporin (Cat. #IT-01). 10.5 ng of the immunotoxin was injected into the right horizontal diagonal band of Broca, and animals were examined from 2 to 24 weeks later. Although the functionality of the neuronal ingrowth was not examined, surviving neurons did extend their terminals into the denervated area.

Origin and immunolesioning of cholinergic basal forebrain innervation of cat primary auditory cortex.

Kamke MR, Brown M, Irvine DR

Hear Res 206(1-2):89-106, 2005.

In this study the authors assessed the use of a cholinergic immunotoxin while

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