

# Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

## Purkinje cell loss by OX7-saporin impairs excitatory and inhibitory eyeblink conditioning.

Nolan BC, Freeman JH Jr

*Behav Neurosci* 119(1):190-201, 2005

Although the contributions of the cortical cerebellum to eyeblink-conditioned excitation have been extensively investigated, involvement in inhibition of this reflex is unclear. After intracerebroventricular infusions of 15.0 µg of OX7-SAP (Cat. #IT-02), rats displayed impaired retention and savings of preinfusion excitatory conditioning, indicating that the Purkinje cells that were eliminated by OX7-SAP are essential for maintenance of excitatory eyeblink conditioning. Inhibition is not prevented by loss of these Purkinje cells, suggesting that extracerebellar structures play a critical role in this process.

## Forebrain acetylcholine regulates adult hippocampal neurogenesis and learning.

Mohapel P, Leanza G, Kokaia M, Lindvall O  
*Neurobiol Aging* 26:939-946, 2005

New hippocampal neurons that are thought to be involved in memory formation are generated in the dentate gyrus (DG) throughout adulthood. In this study, rats were injected at various sites with 192-Saporin (Cat. #IT-01). The authors found that acetylcholine levels, which are reduced upon administration of 192-Saporin, are linked to proliferation and/or short-term survival of DG neurons, rather than long-term survival or differentiation. Cognitive defects that could be linked to the reduced number of new neurons were also observed.

## Elimination of rat spinal neurons expressing neurokinin 1 receptors reduces bladder overactivity and spinal c-fos expression induced by bladder irritation.

Seki S, Erickson KA, Seki M, Nishizawa O, Igawa Y, Ogawa T, de Groat WC, Chancellor MB, Yoshimura N

*Am J Physiol Renal Physiol* 288(3):F466-F473, 2005

Substance P is reported to play a role in the micturition reflex as well as in nociceptive responses. The authors investigated the role that neurokinin-1 receptor-expressing cells in the spinal cord play in the micturition reflex of rats. 8 µl of 1.0 or 1.5 µM SSP-SAP (Cat. #IT-11) was injected into the L6-S1 level of the spinal cord, and cystometric parameters were measured before and after capsaicin administration to the bladder. Lesioned animals did not display the bladder overactivity normally seen in the presence of capsaicin.



## The effect of central cholinergic and noradrenergic denervation on hippocampal sympathetic ingrowth and apoptosis-like reactivity in the rat.

Harrell LE, Parsons DS, Kolasa K  
*Brain Res* 1033(1):68-77, 2005

Cholinergic denervation of the hippocampus is followed by ingrowth of peripheral sympathetic fibers originating

from the superior cervical ganglion. The authors injected 1 µg of 192-Saporin (Cat. #IT-01) into the medial septum of rats along with a noradrenergic fiber neurotoxin to investigate whether the noradrenergic system was involved with this ingrowth as well. The data provide more evidence that hippocampal sympathetic ingrowth can be stimulated by cholinergic denervation alone.

## Involvement of GABAergic and cholinergic medial septal neurons in hippocampal theta rhythm.

Yoder RM, Pang KC

*Hippocampus* Epub Jan, 2005

It is thought that hippocampal theta rhythm (HPC ) is involved in attention and acquisition of sensory information. The HPC circuit includes the medial septum/diagonal band of Broca (MSDB), which projects to the hippocampus through GABAergic and cholinergic neurons. A total of 0.325 µg of 192-Saporin (Cat. #IT-01) was injected into the MSDB of rats. Hippocampal recordings measuring field potential oscillations were taken, indicating that both GABAergic and cholinergic neurons are involved in HPC .

## Hebb-Williams performance and scopolamine challenge in rats with partial immunotoxic hippocampal cholinergic deafferentation.

Marques Pereira P, Cosquer B, Schimchowitsch S, Cassel JC

*Brain Res Bull* 64(5):381-394, 2005

Much of the recent work done on the role of cholinergic neurons in the hippocampus has been focused on detecting subtle learning deficits. In this study, the authors investigated the effect of 0.368 µg of 192-Saporin (Cat. #IT-01) administered to the medial septum of rats

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