Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

Neuroanatomical and behavioral effects of a novel version of the cholinergic immunotoxin mu p75-saporin in mice

Moreau PH, Cosquer B, Jeltsch H, Cassel JC, Mathis C
Hippocampus [Epub Feb 27], 2008.

192-IgG-SAP (Cat. #IT-01) has been used for over a decade to examine the cholinergic system in the basal forebrain of rats. Establishing the same reagent for mice has been problematic. Here the authors describe the use of a mouse-specific lesioning agent, mu p75-SAP (Cat. #IT-16). After deciding on a dosage of 0.4 μg administered in the form of bilateral intracerebroventricular injections, mice were lesioned and tested. Lesioned animals displayed increased locomotor activity, and spatial learning and memory deficits, with minimal side effects. (see cover article)

Selective impairment of the cerebellar C1 module involved in rat hind limb control reduces step-dependent modulation of cutaneous reflexes

Pijpers A, Winkelman BH, Bronsing R, Ruigrok TJ
J Neurosci 28(9):2179-2189, 2008.

The cerebellar cortex is arranged in a series of modules. Elucidation of module-specific function has been difficult because of the closely arranged structure of these modules. Here the authors lesioned the C1/C3 hindlimb module of the rat with CTB-SAP (Cat. #IT-14). Rats received 75-125 ng injections of CTB-SAP into the C1 zone of the copula pyramidis or the paramedian lobule of the right cerebellar hemisphere. C1-injected animals displayed marked diminishment of cutaneously induced reflexes with no significant impact on walking or stepping pattern.

Septal grafts restore cognitive abilities and amyloid precursor protein metabolism

Aztiria E, Cataudella T, Spampinato S, Leanza G
Neurobiol Aging [Epub Feb 5], 2008.

Although cholinergic loss and the presence of ß-amyloid plaques are well documented in Alzheimer's disease, it is unknown whether restoration of regulatory cholinergic inputs affects *in vivo* β-amyloid precursor protein (APP). 5 μg of 192-IgG-SAP (Cat. #IT-01) was split between the lateral ventricles of rats. 6 months post-surgery the animals were implanted with cholinergic-rich septal tissue grafts. Grafted animals exhibited normal or near-normal levels of APP. APP levels, as well as improved spatial navigation performance, correlated strongly with graft-induced cholinergic changes.

The pedunculopontine tegmental nucleus and the nucleus basalis magnocellularis: do both have a role in sustained attention?

Rostron CL, Farquhar MJ, Latimer MP, Winn P
BMC Neurosci 9:16, 2008.

This study provided further investigation into the role of the pedunculopontine tegmental nucleus (PPTg) in control of sustained attention. Rats were given 0.13 μg injections of 192-IgG-SAP (Cat. #IT-01) into the nucleus basalis magnocellularis. The immunotoxin-treated animals were compared to animals receiving ibotenate injections into the PPTg. Results suggest that ibotenate lesions cause impaired selection of conditioned response as shown by an increase in unconditioned behaviors. 192-IgG-SAP treated animals exhibited difficulty obtaining successful lever presses linked to attention.

Spinal mu-opioid receptor-expressing dorsal horn neurons: role in nociception and morphine antinociception

Kline RHt, Wiley RG
J Neurosci 28(4):904-913, 2008.

The authors used Dermorphin-SAP (Cat. #IT-12) to investigate the function of spinal cord mu-opioid receptor (MOR)-expressing dorsal horn neurons in nociception and morphine analgesia. Rats were treated with 500 ng intrathecal injections of Dermorphin-SAP; 500 ng of Blank-SAP (Cat. #IT-21), and up to 1 μg of Saporin (Cat. #PR-01) were used as controls. The data indicate that MOR-expressing dorsal horn neurons are necessary for morphine action and play a role in nocifensive responses to persistent pain in the formalin test.

Basal forebrain and saporin cholinergic lesions: the devil dwells in delivery details

Kalinchuk AV, Porkka-Heiskanen T, McCarley RW
Sleep 29(11):1385-1387; discussion 1387-1389, 2006.

The authors of this commentary discuss results presented by Blanco-Centurion *et al*. (*J Neurosci* 26: 8092-8100, 2006). The topic is the role of adenosine in the basal forebrain in the control of sleep homeostasis. Discussion covers the potential differences found when 192-IgG-SAP (Cat. #IT-01) is administered locally as compared to an intracerebroventricular injection.

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