

Targeting Topics: Recent Scientific References

(continued from page 3)

From anxiety to autism: spectrum of abnormal social behaviors modeled by progressive disruption of inhibitory neuronal function in the basolateral amygdala in Wistar rats

Truitt WA, Sajdyk TJ, Dietrich AD, Oberlin B, McDougle CJ, Shekhar A
Psychopharm (Berl) Feb 3, 2007 [ePub].

The amygdala has been identified as being involved in social behaviors. Six 4 ng injections of SSP-SAP (Cat. #IT-11) were administered bilaterally into the basolateral nucleus (BLA) of the amygdala of rats. Blank-SAP (Cat. #IT-21) was used as a control. Results of a social interaction paradigm suggest that in normal animals social inhibition can be overcome by habituation. In lesioned animals, however, social inhibition is not reversed by habituation, indicating that NK-1 receptor-expressing GABAergic interneurons in the BLA are important in this system.

Astrocytic reaction to a lesion, under hormonal deprivation

Martinez L, de Lacalle S
Neurosci Lett Jan 12, 2007 [ePub].

One effect of estradiol on astrocytes is the mediation of neuronal sprouting. Astrocytes express glial fibrillary acidic protein (GFAP) in response to injury, but estradiol has been shown to repress GFAP expression. Ovariectomized female rats received 15 ng of 192-IgG-SAP (Cat. #IT-01) into the horizontal limb of the diagonal band of Broca, followed by long-term estrogen treatment. The results suggest that estradiol deprivation may exacerbate the effects of a cholinergic lesion, and administration of estradiol may aid the recovery of lesioned cholinergic neurons by blocking GFAP expression.

Targeted Delivery and Enhanced Cytotoxicity of Cetuximab-Saporin by Photochemical Internalization in EGFR-Positive Cancer Cells

Yip WL, Weyergang A, Berg K, Tonnesen HH, Selbo PK
Mol Pharm Jan 31, 2007 [ePub].

Photochemical internalization (PCI) releases macromolecules from endocytic vesicles using photosensitizer activation by light.

This technique allows the release of endocytosed molecules before degradation occurs in the lysosome. The authors demonstrate the proof-of-concept for this technique by combining biotinylated cetuximab (a chimeric monoclonal antibody to the EGFR) with streptavidin-ZAP (Cat. #IT-27). The conjugate was applied to three different human cancer cell lines, demonstrating enhanced specificity and toxicity against cells expressing the EGFR.



Lesions to the nucleus basalis magnocellularis lower performance but do not block the retention of a previously acquired learning set

Bailey AM, Lee JM
Brain Res 1136(1):110-121, 2007.

A major source of cholinergic innervation to several cortices is the nucleus basalis magnocellularis (NBM). Rats were trained to acquire an olfactory discrimination learning set, then were lesioned with 192-IgG-SAP (Cat. #IT-01) or quisqualic acid. 0.075 μ g of 192-IgG-SAP was administered in 2 sets of bilateral infusions. While treated animals performed poorly following the surgery, performance improved to better than expected by chance during the second trial. The authors discuss the role of the NBM in cognitive flexibility.

Noncholinergic lesions of the medial septum impair sequential learning of different spatial locations

Dwyer TA, Servatius RJ, Pang KC
J Neurosci 27(2):299-303, 2007.

The medial septum and the vertical limb of the diagonal band of Broca (MSDB) have extensive connections to the hippocampus. In

general, impairments due to loss of cholinergic neurons in this area have been smaller than those due to the loss of noncholinergic neurons. The authors treated rats with either 192-IgG-SAP (Cat. #IT-01) or kainic acid into each hemisphere of the medial septum. Behavioral testing following surgery demonstrated that the animals with noncholinergic lesions had impaired performance, even when compared to the animals with cholinergic lesions.

Extracellular signal-regulated kinase-regulated microglia-neuron signaling by prostaglandin E2 contributes to pain after spinal cord injury

Zhao P, Waxman SG, Hains BC
J Neurosci 27(9):2357-2368, 2007.

Spinal cord injury frequently leads to the development of long-term chronic pain. Recent data has shown that activated microglia are involved in the maintenance of this pain state. Following a spinal cord contusion injury rats were treated with a 36- μ g injection of Mac-1-SAP (Cat. #IT-06) into the lumbar enlargement. Treated animals were found to have reduced microglial staining, reduction in prostaglandin E2 levels, and fewer pain-related behaviors.

Decreased vesicular acetylcholine transporter and alpha(4)beta(2) nicotinic receptor density in the rat brain following 192 IgG-saporin immunolesioning

Quinlivan M, Chalon S, Vergote J, Henderson J, Katsifis A, Kassiou M, Guilloteau D
Neurosci Lett Mar 3, 2007 [ePub].

The vesicular acetylcholine transporter (VACHT) is a useful imaging target to assess Alzheimer's disease, since this transporter is expressed on cholinergic cells that are lost as the disease progresses. Through the use of 192-IgG-SAP (Cat. #IT-01) the authors demonstrate the use of two radioligands, one that binds VACHTs, the other which binds nicotinic acetylcholine receptors (nAChRs). The results show the efficacy of each radioligand, as well as the loss of nAChRs on cholinergic neurons after treatment with 192-IgG-SAP.

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