Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

Mu and delta opioid receptors on nociceptors attenuate mechanical hyperalgesia in rat

Joseph EK, Levine JD
Neuroscience Epub, 2010.

In this work the authors analyzed nociceptor populations mediating mechanical hyperalgesia in the rat. Rats received 3.2 µg of IB4-SAP (Cat. #IT-10) into the subarachnoid space between the L4 and L5 vertebrae. Hyperalgesia due to the administration of NGF was inhibited by DAMGO and SNC even in lesioned animals. These data indicate that most nociceptor populations are involved in mechanical hyperalgesia, and that the mu opioid and delta opioid receptors are co-expressed on some trkA-positive nociceptors.

Induction of CD4(+)CD25(+) T regulatory cells with CD103 depletion

Zikri NN, Schumer E, Wang JJ, Gaughan A, Hadley GA, Moffatt-Bruce SD
J Surg Res 163(1):162-168, 2010.

CD8+ T cells expressing CD103 have been shown to play a key role in the rejection of renal allografts. Use of M290-SAP (a custom saporin conjugation) allows allograft tolerance even in a completely mismatched islet cell transplant model. Use of 1 mg M290-SAP/kg body weight in mice allowed the authors to characterize the kinetics of M290-SAP and its induction of CD4 CD25 regulatory T cells.

Saporin toxin-conjugated monoclonal antibody targeting prostate-specific membrane antigen has potent anticancer activity

Kuroda K, Liu H, Kim S, Guo M, Navarro V, Bander NH
Prostate 70(12):1286-1294, 2010.

Current treatments for prostate cancer are only moderately effective. In this work the authors examined the cytotoxic efficacy of a prostate-specific membrane antigen (PMSA) antibody conjugated to saporin on PMSA-positive cell lines. hJ591, a humanized PMSA antibody, was biotinylated and combined with streptavidin-ZAP (Cat. #IT-27). The hJ591-streptavidin-ZAP complex was specifically cytotoxic to PMSA-positive cell lines, and had anti-cancer activity in a xenograft model. This work demonstrates the anti-cancer potential of targeting PMSA.

Septohippocampal pathways contribute to system consolidation of a spatial memory: Sequential implication of gabaergic and cholinergic neurons

Lecourtier L, de Vasconcelos AP, Leroux E, Cosquer B, Geiger K, Lithfous S, Cassel JC
Hippocampus Epub, 2010.

Few studies have examined the role of GABAergic septohippocampal projections in memory consolidation. The authors administered 192-IgG-SAP (400 ng; Cat. #IT-01) and/or orexin-SAP (70 ng; discontinued) to the medial septum/vertical limb of the diagonal band of Broca of rats. Spatial memory tests were then administered over several weeks. The data indicate that both GABAergic and cholinergic septohippocampal systems contribute to memory stabilization, possibly in a sequential manner.

A new oxytocin-saporin cytotoxin for lesioning oxytocin-receptive neurons in the rat hindbrain

Baskin DG, Kim F, Gelling RW, Russell BJ, Schwartz MW, Morton GJ, Simhan HN, Moralejo DH, Blevins JE
Endocrinology 151(9):4207-4213, 2010.

Evidence suggests that release of oxytocin in the nucleus tractus solitarius (NTS) of the hindbrain can inhibit food intake by augmenting the cholecystokinin satiety response. The authors used oxytocin-SAP (Cat. #IT-46) to eliminate oxytocin receptive cells in the NTS. Blank-SAP (Cat. #IT-21) was used as a control. 0.5 µl-injections of oxytocin-SAP into the NTS caused reduced satiation effect of CCK-8 and blocked the stimulation of food intake by an oxytocin receptor antagonist.

Contribution of limbic norepinephrine to cannabinoid-induced aversion

Carvalho AF, Reyes AR, Sterling RC, Unterwald E, Van Bockstaele EJ
Psychopharmacology (Berl) 211(4):479-491, 2010.

The authors used bilateral injections of anti-DBH-SAP (Cat. #IT-03) into the nucleus accumbens and the bed nucleus of the stria terminalis to investigate the role of neuroepinephrine in cannabinoid-induced aversion and anxiety. Lesioned animals received bilateral 52.5-ng injections of anti-DBH-SAP into the nucleus accumbens or 63 ng into the bed nucleus of the stria terminalis. Saporin (Cat. #PR-01) was used as a control. Lesioned animals displayed reversed aversive behavior, but no change in anxiety-like behavior.

Noradrenergic Nuclei that Receive Sensory Input During Mating and Project to the Ventromedial Hypothalamus Play a Role in Mating-Induced Pseudopregnancy in the Female Rat

Northrop LE, Polston EK, Erskine MS
J Neuroendocrinol 22(10):1061-1071, 2010.

Maintenance of pregnancy or pseudo-pregnancy in rats is maintained by bicircadian prolactin surges induced by vaginal-cervical stimulation. In order to test the hypothesis that medullary noradrenergic cell groups are involved in this process the authors infused rats with either 2 ng or 60 ng anti-DBH-SAP (Cat. #IT-03) into the ventrolateral division of the ventromedial hypothalamus and the posterodorsal medial amygdala. Mouse IgG-SAP (Cat. #IT-18) was used as a control. The data confirm that noradrenergic neurons are involved in the maintenance of pregnancy or pseudopregnancy.

Decrease in membrane phospholipid unsaturation induces unfolded protein response

Ariyama H, Kono N, Matsuda S, Inoue T, Arai H
J Biol Chem 285(29):22027-22035, 2010.

Properties of the cell membrane can be influenced by the degree of fatty acid unsaturation in membrane phospholipids. Alteration of this unsaturation has been

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