

Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

Tomoregulin internalization confers selective cytotoxicity of immunotoxins on prostate cancer cells.

Zhao XY, Liu HL, Liu B, Willuda J, Siemeister G, Mahmoudi M, Dinter H
Transl Oncol 1:102-109, 2008.

Tomoregulin is a type 1 transmembrane protein with a short cytoplasmic tail, and is found in the brain and prostate. After confirming cell surface localization by flow cytometry, and determining expression levels by whole-cell binding assays, the authors evaluated the use of tomoregulin as a target for immunotoxin therapy. Cells transfected with tomoregulin were treated with anti-tomoregulin + Mab-ZAP (IC_{50} = 160 pM; Cat. #IT-04) *in vitro*. The results demonstrate the potential for tomoregulin in prostate cancer treatment.

Reduced cholinergic status in hippocampus produces spatial memory deficits when combined with kainic acid induced seizures.

Craig LA, Hong NS, Kopp J, McDonald RJ
Hippocampus [Epub Jul 23], 2008.

The loss of cholinergic neurons in the medial septum and seizures are both associated with Alzheimer's disease. The authors investigated links between these factors using 192-IgG-SAP (Cat. #IT-01) and kainic acid. Rats received 0.15 μ g of 192-IgG-SAP delivered to the medial septum and vertical limb of the diagonal band of Broca in four injections. Animals receiving both 192-IgG-SAP and kainic acid performed significantly worse in water maze tests than control animals, indicating that loss of cholinergic neurons and seizures interact in Alzheimer's disease.

GDNF hyperalgesia is mediated by PLCgamma, MAPK/ERK, PI3K, CDK5 and Src family kinase signaling and dependent on the IB4-binding protein versican.

Bogen O, Joseph EK, Chen X, Levine JD
Eur J Neurosci 28:12-19, 2008.

C-fiber nociceptors have been divided into NGF and GDNF classes. Here the authors examined the function of an isolectin B4-binding subpopulation of these nociceptors. Rats received 40 ng of IB4-SAP (Cat. #IT-10) into the intrathecal space between the fifth and sixth lumbar vertebrae. The results demonstrate that GDNF sensitizes IB4⁺ C-fiber nociceptors and causes mechanical hyperalgesia.



Amygdala intercalated neurons are required for expression of fear extinction.

Likhtik E, Popa D, Apergis-Schoute J, Fidacaro GA, Pare D
Nature 454:642-645, 2008.

Scientists have been using fear learning in animals to study human anxiety disorders. In order to investigate the contribution of amygdala plasticity to fear learning, rats received 0.25- μ l bilateral infusions of 3- μ M dermorphin-

SAP (Cat. #IT-12) into the amygdala. Blank-SAP (Cat. #IT-21) was used as a control. Lesioned rats displayed extinction expression deficits, indicating that the eliminated intercalated amygdala neurons play a large role in the extinction process. (see cover story)

IB4 afferent sprouting contributes to bladder dysfunction in spinal rats.

Zinck ND, Downie JW
Exp Neurol 213:293-302, 2008.

Spinal cord injury can cause inefficient bladder function, but the direct cause is not well understood. Most work has focused on afferent neurons that contain CGRP and respond to NGF. Here the authors investigate the role of isolectin B4 (IB4)-expressing neurons that are supported by GDNF. Rats received intrathecal injections of either 2.4 μ g IB4-SAP (Cat. #IT-10) or 3 μ g control saporin (Cat. #PR-01). The data suggest that IB4-afferent sprouting is involved in bladder dysfunction following spinal cord transection.

Renal sympathoinhibition induced by hypernatremia: Involvement of A1 noradrenergic neurons.

Pedrinio GR, Rosa DA, Korim WS, Cravo SL
Auton Neurosci [Epub Aug 8], 2008.

A1 noradrenergic neurons in the caudal ventrolateral medulla (CVLM) are thought to contribute to body fluid homeostasis and cardiovascular regulation. In order to examine the role these neurons play on inhibition of renal sympathetic nerve activity (RSNA) induced by hypertonic saline infusion, rats received 6.3 ng of anti-DBH-SAP (Cat. #IT-03) into the CVLM. Saporin (Cat. #PR-01) was used as a control.

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