Targeting Topics: Recent Scientific References

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implicated in many disease states. Using an SCD1 antibody (Cat. #AB-259) to visualize SCD1 levels by western blot, the authors determined that there are several genetic factors that affect the level of saturated fatty acid in systems modulating insulin resistance, type 2 diabetes, and cardiovascular disease.

NK-1-receptor-mediated lesion of spinal post-synaptic dorsal column neurons might improve intractable visceral pain of cancer origin

Wang Y, Mu X, Liu Y, Zhang X, Wu A, Yue Y
Med Hypotheses Epub, 2010.

There is evidence that spinal post-synaptic dorsal column neurons begin to express neurokinin-1 receptors after visceral stimulation. The authors discuss using this expression profile to target SP-SAP (Cat. #IT-11) to these neurons and eliminate them. This use of 'molecular neurosurgery' may be a replacement for traditional neurosurgery for the treatment of cancer-related visceral pain.

Photochemical internalization (PCI): a technology for drug delivery

Berg K, Weyergang A, Prasmickaite L, Bonsted A, Hogset A, Strand MT, Wagner E, Selbo PK
Methods Mol Biol 635:133-145, 2010.

This review discusses photochemical internalization (PCI), which is a method used to overcome some of the intracellular barriers to introducing molecules into cancer cells. Some difficulties for such therapies include a low rate of release from endocytic vesicles and degradation of the therapeutic molecule by lysosomal enzymes. The use of streptavidin-ZAP (Cat. #IT-27) with a biotinylated EGF receptor antibody is discussed.

Distinct neural pathways mediate alpha7 nicotinic acetylcholine receptor-dependent activation of the forebrain

Thomsen MS, Hay-Schmidt A, Hansen HH, Mikkelsen JD
Cereb Cortex 20(9):2092-2102, 2010.

In this work the authors examine the systems controlling cognitive function in the medial prefrontal cortex (mPFC) and nucleus accumbens shell (ACCshell). Rats received 30-ng injections of 192-IgG-SAP (Cat. #IT-01) into the horizontal limb of the diagonal band of Broca, eliminating the cortically-projecting cholinergic neurons. Deficits in the basal forebrain and the mPFC are shown to be involved in attentional function, while deficits in the ACCshell are shown to be involved in the beneficial effects of antipsychotics on schizophrenia.

Effect of applying p75NTR saporin to a punctured intervertebral disc on calcitonin gene-related peptide expression in rat dorsal root ganglion neurons

Sugiura A, Ohtori S, Yamashita M, Yamauchi K, Inoue G, Suzuki M, Norimoto M, Orita S, Eguchi Y, Kuniyoshi K, Ochiai N, Kishida S, Takaso M, Aoki Y, Ishikawa T, Arai G, Miyagi M, Kamoda H, Nakamura J, Takahashi K
J Orthop Sci 15(3):407-413, 2010.

Lumbar intervertebral discs are suspected to be a source of low back pain, in part because of the innervation of these discs by neurons containing substance P and CGRP receptors. Rats received 2.5 µg of 192-IgG-SAP (Cat. #IT-01) into the L5/6 vertebral disc after the disc was punctured. While half of the dorsal root ganglion neurons innervating the disc were positive for CGRP post-puncture, animals receiving 192-IgG-SAP displayed reduced CGRP expression, indicating a role for the p75 receptor in discogenic pain.

Postnatal development and functional adaptations of the melanopsin photoreceptive system in the albino mouse retina

Gonzalez-Menendez I, Contreras F, Cernuda-Cernuda R, Provencio I, Garcia-Fernandez JM
Invest Ophthalmol Vis Sci 51(9):4840-4847, 2010.

Melanopsin-expressing intrinsically photosensitive retinal ganglion cells (ipRGCs) adjust the circadian pacemaker of mammals by detecting light. The authors tracked the development of ipRGCs in postnatal mice under varying light conditions. Immunohistochemistry for these experiments was done using a melanopsin polyclonal antibody (Cat. #AB-N38). Alteration of the standard light/dark cycle clearly affected the development of ipRGCs.

Noradrenergic neurons of the area postrema mediate amylin's hypophagic action

Potes CS, Turek VF, Cole RL, Vu C, Roland BL, Roth JD, Riediger T, Lutz TA
Am J Physiol Regul Integr Comp Physiol 299(2):R623-631, 2010.

The neuronal pathways used to process the physiological response to amylin were investigated using 50-ng injections of anti-DBH-SAP (Cat. #IT-03) into the area postrema (AP) or 25 ng into the lateral parabrachial nucleus. Mouse IgG-SAP (Cat. #IT-18) was used as a control. The response to amylin administration (reduction of food intake) was significantly reduced in lesioned animals, indicating that noradrenergic neurons in the AP control at least part of this pathway.

Substance P modulation of hypoglossal motoneuron excitability during development: changing balance between conductances

Adachi T, Huxtable AG, Fang X, Funk GD
J Neurophysiol 104(2):854-872, 2010.

This work examined how neuromuscular networks that are immature, but functional, at birth move through development while remaining operational. The authors focused on hypoglossal motoneurons involved in behaviors such as swallowing, suckling, and breathing. Immunohistochemistry was

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