

Targeting Topics: Recent Scientific References

Reviewed by **Matthew Kohls**

Conjugation of an anti transferrin receptor IgG3-avidin fusion protein with biotinylated saporin results in significant enhancement of its cytotoxicity against malignant hematopoietic cells

Daniels TR, Ng PP, Delgado T, Lynch MR, Schiller G, Helguera G, Penichet ML
Mol Cancer Ther 6(11):2995-3008, 2007.

The human transferrin receptor (hTfR) is overexpressed in malignant cells. Using Advanced Targeting System's custom biotinylation service, the authors combined an anti-hTfR antibody-avidin fusion protein with biotinylated saporin (Cat. #PR-01, saporin alone), and examined the effect of the combined complex on cancer cells *in vitro*. Although the antibody-avidin fusion protein has an intrinsic cytotoxic effect, the fusion protein-saporin complex was able to overcome the resistance that some cells showed to the fusion protein alone.

Selective immunolesion of cholinergic neurons leads to long-term changes in 5-HT_{2A} receptor levels in hippocampus and frontal cortex

Severino M, Pedersen AF, Trajkovska V, Christensen E, Lohals R, Veng LM, Knudsen GM, Aznar S
Neurosci Lett 428(1):47-51, 2007.

Changes in several neurotransmitter systems, including serotonin and 5HT_{2A} receptors, are associated with early Alzheimer's disease (AD). The authors gave rats intracerebroventricular injections of either 2.5 or 5 μ g of 192-IgG-SAP (Cat. #IT-01) then examined both of these systems. 5HT_{2A} receptor levels were markedly decreased in the frontal cortex and markedly increased in the hippocampus of animals lesioned with 5 μ g of 192-IgG-SAP. The change in 5HT_{2A} receptor number suggests that the AD effect stems from interaction with the cholinergic system.

The role of the nucleus basalis of Meynert and reticular thalamic nucleus in pathogenesis of genetically determined absence epilepsy in rats: A lesion study

Berdiev RK, Chepurinov SA, Veening JG, Chepurnova NE, van Luijtelaaar G
Brain Res 1185(266-274), 2007.

Absence seizures due to epilepsy usually occur during passive behavior. This work investigated the role of the cholinergic nucleus basalis of Meynert (NB) and the reticular thalamic nucleus (RT) in these seizures. Rats received either 75 ng of 192-IgG-SAP (Cat. #IT-01) or the control, mouse IgG-SAP (Cat. #IT-18), into the NB and the RT. Loss of cholinergic neurons in the NB resulted in an increased number of spike-and-wave discharges (SWD), a marker for absence seizures.



Food-elicited increases in cortical acetylcholine release require orexin transmission

Frederick-Duus D, Guyton MF, Fadel J
Neuroscience 149(3):499-507, 2007.

In these experiments the authors examine the hypothesis that orexin fibers from the hypothalamus are necessary for basal forebrain cholinergic system (BFCS) activation in a food restriction model. Rats received 200 ng of orexin-SAP (Cat. #IT-20) into the lateral hypothalamus/perifornical area. Lesioned

animals that were also deprived of food displayed increased feeding latency when presented with food. This and other data indicate orexin in the BFCS is involved in attention to stimuli associated with homeostatic challenges.

Lesions of the basal forebrain impair reversal learning but not shifting of attentional set in rats

Tait DS, Brown VJ
Behav Brain Res 187(1):100-108, 2008.

The authors compared specific lesions of the basal forebrain using 192-IgG-SAP (Cat. #IT-01) with non-specific lesions generated by ibotenic acid. Rats were given 0.12 μ g per 0.5 μ l bilateral injections of 192-IgG-SAP. The treated animals were then tested in food reward tasks involving two-choice discriminations and reversal of stimulus-reward. Animals with specific lesions did not show impairment with any of the tasks suggesting that non-cholinergic neurons are involved in reversal learning. This work also demonstrates the similarities between monkey and rodent basal forebrain function.

Amyloid beta protein modulates glutamate-mediated neurotransmission in the rat basal forebrain: involvement of presynaptic neuronal nicotinic acetylcholine and metabotropic glutamate receptors

Chin JH, Ma L, MacTavish D, Jhamandas JH
J Neurosci 27(35):9262-9269, 2007.

This work focused on the effect of amyloid beta on glutamate-mediated neurotransmission in the diagonal band of Broca. Using neurons identified by staining with Cy3-labeled 192-IgG (Cat. #FL-01, 5 μ l of 1:1 diluted antibody injected into the left and right ventricle) the authors monitored the response to amyloid beta by measuring excitatory

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