Targeting Topics: Recent Scientific References

Reviewed by Matthew Kohls

Removal of cholinergic input to perirhinal cortex disrupts object recognition but not spatial working memory in the rat.

Winters BD, Bussey TJ

Eur J Neurosci 21(8):2263-2270, 2005.

The perirhinal cortex of the temporal lobe is crucial to object recognition memory. The authors examined the role of cholinergic input from the basal forebrain in this process. Rats were injected bilaterally with 0.2 µl of 0.02 µg/µl 192-Saporin (Cat. #IT-01) into 3 sites of the perirhinal cortex, and tested in object recognition and spatial working memory tasks. Spatial working memory remained intact, but object recognition was impaired, indicating a specific function for cholinergic input to the perirhinal cortex.

CEACAM6 as a novel target for indirect type 1 immunotoxin-based therapy in pancreatic adenocarcinoma.

Duxbury MS, Ito H, Ashley SW, Whang EE

Biochem Biophys Res Commun 317(3):837-843, 2004.

Carcinoembryonic antigen-related cell adhesion molecule 6 (CEACAM6) is a cell-surface molecule that is overexpressed in a variety of human cancers. Here, the authors investigate the efficacy of a biotinylated antibody that recognizes CEACAM6 bound to streptavidin-ZAP (Cat. #IT-27) in elimination of tumor cells *in vitro* and *in vivo*. Treatment of cultured tumor cells induced significant specific cytotoxicity, while tumor growth was suppressed in a mouse xenograft model. These results indicate targeting of CEACAM6 may be a viable therapeutic strategy.

Pro- and anti-apoptotic evidence for cholinergic denervation and hippocampal sympathetic ingrowth in rat dorsal hippocampus.

Harrell LE, Parsons DS, Kolasa K

Exp Neurol 194(1):182-190, 2005.

Cholinergic denervation of the hippocampus results in hippocampal sympathetic ingrowth (HSI) of fibers from the superior cervical ganglion; this ingrowth may exert an anti-apoptotic effect. After 1-µg injections of 192-Saporin (Cat. #IT-01) into the medial septum of rats, the authors investigated the levels of apoptotic protein expression and DNA fragmentation. The findings suggest that cholinergic denervation causes pro-apoptotic responses, but HSI exerts a protective effect against programmed cell death.

Evaluation of cholinergic markers in Alzheimer's disease and in a model of cholinergic deficit.

Gil-Bea FJ, Garcia-Alloza M, Dominguez J, Marcos B, Ramirez MJ

Neurosci Lett 375(1):37-41, 2005.

Several markers of cholinergic function may be able to predict cognitive deficits due to disorders such as Alzheimer's disease. The authors compared baseline measurements of acetylcholine, cholinacetyltransferase, and acetylcholinesterase (AChE) of rats against animals treated with 0.067 µg injections of 192-Saporin (Cat. #IT-01) into both hemispheres of the nucleus basalis magnocellularis. The results indicate that measurement of AChE activity is an inexpensive and reliable method to evaluate cholinergic function in rats as well as in humans.

Neonatal lesion of forebrain cholinergic neurons: Further characterization of behavioral effects and permanency.

Pappas BA, Payne KB, Fortin T, Sherren N

Neuroscience 133(2):485-492, 2005.

Neonatal rats treated with bilateral intracerebroventricular injections of 300 ng of 192-Saporin (Cat. #IT-01) showed basal forebrain cholinergic neuron loss that was still evident at 24 months of age. The authors tested the reference memory and attentional processing of these rats in a Morris water maze. The results suggest that impaired performance of the treated animals in complex maze tasks reflects reduced problem solving ability rather than a deficit in attentional processing.

Basal forebrain cholinergic lesions in 7-day-old rats alter ultrasound vocalisations and homing behaviour.

Scattoni ML, Puopolo M, Calamandrei G, Ricceri L

Behav Brain Res 161(1):169-172, 2005.

In this study the authors examined the effects of cholinergic depletion of the basal forebrain on the establishment and maintenance of mother-pup interaction in rats. Post-natal day 7 pups were lesioned with bilateral intracerebroventricular injections of 192-Saporin (0.42 µg, Cat. #IT-01). Treated animals displayed a reduced number of ultrasonic vocalizations, as well as apparent

(continued on page 4)