Targeting Topics: Recent Scientific References

(continued from page 3)

increased difficulty in identifying the nest "boundary." The evidence shows that early damage to basal forebrain cholinergic nuclei can influence behavior as early as the second-postnatal week.

Orexin-saporin lesions of the medial septum impair spatial memory.

Smith HR, Pang KC

Neuroscience 132(2):261-271, 2005.

The medial septum and diagonal band of Broca (MSDB) have been shown to be important for spatial learning and memory. The authors investigated the role orexin-containing neurons from the hypothalamus play in these processes. Rats were treated with three injections of 40-120 ng of orexin-SAP (Cat. #IT-20) into the MSDB. Performance in spatial working and spatial reference memory tasks indicate that orexin innvervation of the MSDB may modulate spatial memory through both GABAergic and cholinergic septohippocampal neurons.

Effects of cholinergic deafferentation of the rhinal cortex on visual recognition memory in monkeys.

Turchi J, Saunders RC, Mishkin M

Proc Natl Acad Sci U S A 102(6):2158-2161, 2005.

The rhinal cortex has been shown to play a critical role in recognition memory. The investigators examined the effect of eliminating cholinergic input to the rhinal cortex on the formation of new visual memories in macaques. Animals were given 0.01 µg injections of ME20.4-SAP (Cat. #IT-15) into the perirhinal and entorhinal cortices. The selective cholinergic deafferentation produced a substantial impairment of visual recognition memory, suggesting that cholinergic activation is essential for the formation of new visual memories.

Time course of behavioral changes following basal forebrain cholinergic damage in rats: Environmental enrichment as a therapeutic intervention.

Paban V, Jaffard M, Chambon C, Malafosse M, Alescio-Lautier B

Neuroscience 132(1):13-32, 2005.

In this study the authors examined the effects of 192-Saporin (Cat. #IT-01) administration to the medial septum (37.5 ng/side) and nucleus basalis magnocellularis (75 ng/side) of rats. The results suggest that behavioral deficits immediately after lesioning are due to cholinergic depletion, while deficits later in life may be connected to a gradual degeneration process. Environmental enrichment had a significant positive effect on lesioned rats, indicating a level of cognitive plasticity.

Molecular Neurosurgery With Targeted Toxins.

Wiley RG and Lappi DA, editors

Humana Press, Totowa, New Jersey, 2005.

Chapters included in text are:

Introduction *Wiley RG, Lappi DA*

Ribosome-Inactivating Proteins *Stirpe F*

Biochemical, Physiological, and Behavioral Characterizations of the Cholinergic Basal Forebrain Lesion Produced by 192 IgG-Saporin *Waite JJ*

Basal Forebrain Cholinergic Lesion by 192 IgG-Saporin: A Tool to Assess the Consequences of Cortical Cholinergic Dysfunction in Alzheimer's Disease *Schliebs R*

192-IgG-Saporin-Induced Partial Cortical Cholinergic Deafferentation as a Model for Determining the Interactions Between Brain Aging and Neurodevelopmental Defects in the Cortical Cholinergic Input System *Sarter M, Bruno JP*

Exploring the Role of Acetylcholine in Primate Cognition Using ME20.4 IgG-Saporin *Ridley RM, Baker HF*

Cortical Cholinergic Deafferentation Induces Aβ Deposition: Toward a Physiological Animal Model of Alzheimer's Disease *Beach TG, Walker DG, Potter PE, Sue LI, Scott S, Layne KJ, Newell AJ, Rauschkolb PK, Poston ME, Webster SD, Durham RA, Emmerling MR, Sawada K, Honer WG, Fisher A, Roher AE*

Chemical Dissection of Brain Glucoregulatory Circuitry *Ritter S, Dinh TT, Bugarith K, Salter DM*

Cardiovascular Deficits After Lesions of C1 Adrenergic Neurons With a Saporin-Based Immunotoxin *Guyenet PG, Stornetta RL, Schreihofer AM*

Saporin Conjugates and Pain *Wiley RG, Lappi DA*

The Use of Saporin Conjugates to Dissect Neurons Responsible for Sleep and Wakefulness *Blanco-Centurion C, Gerashchenko D, Murillo-Rodriguez E, Desarnaud F, Shiromani PJ*

Isolectin B4-Mediated Cytotoxic Targeting of Sensory Neurons *Vulchanova L, Honda CN*

B Fragment of Cholera Toxin Conjugated to Saporin *Ohara PT, Kelley K, Jasmin L*

See cover article by Dr. Douglas Lappi for a summary of this new book.