Apr-May-Jun 2008
Volume 9, Issue 2

Targeting Trends

Reporting the latest news in Molecular Surgery

Selective lesion of basal forebrain cholinergic neurons in mice with the mu p75-saporin immunotoxin: Neuroanatomy and behavior

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The basal forebrain cholinergic neurons (BFCNs) are dramatically affected in several neurodegenerative diseases such as Alzheimer's disease or Rett syndrome. The characterization of the behavioral consequences of selective BFCN lesions is necessary to study the implication of these neurons in cognitive functions. Until recently, this model was not available in mice, despite the growing interest in this species, due to the creation of a wide variety of genetically modified mouse lines modeling neurodegenerative diseases. The first version of a new cholinergic immunotoxin, mu p75-SAP, induced specific lesions of the BFCNs associated with dramatic memory performance deficits, but it also showed side effects and poor survival rates (Berger-

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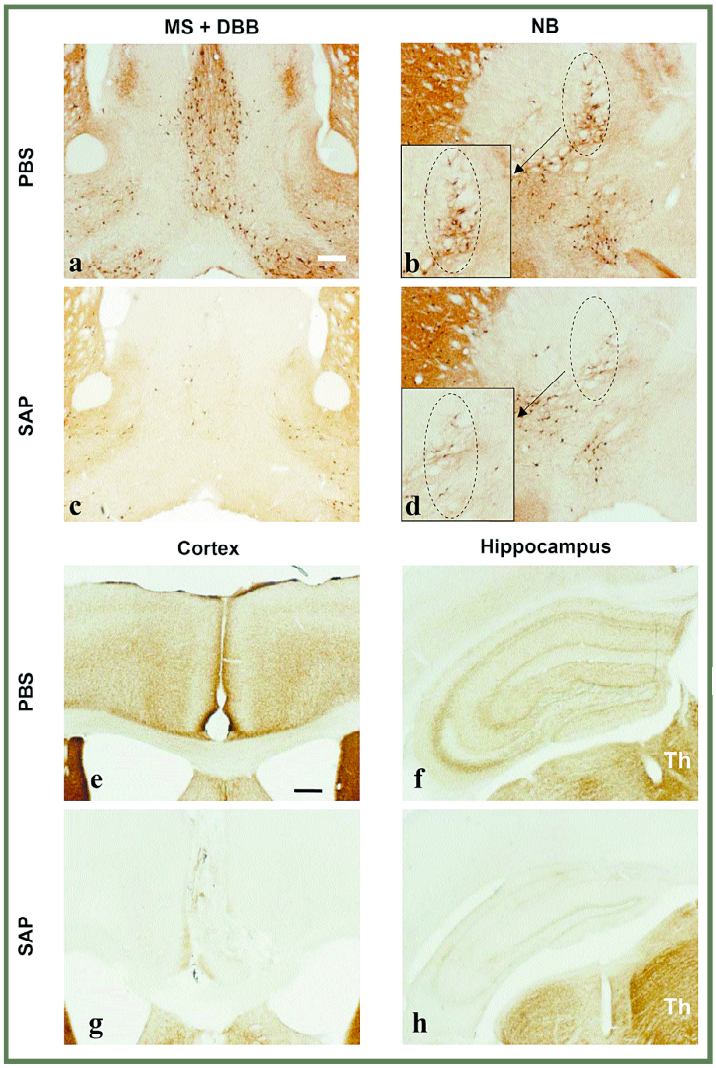

Figure 1. Micrographs of brain coronal sections of mice treated with PBS or mu p75-saporin (SAP). In lesioned mice, the number of ChAT-positive neurons is dramatically reduced in the medial septum (MS) and the diagonal band of Broca (DBB) (a,c) and in the nucleus basalis (NB) (b,d). AChE staining is massively depleted in the cortical mantle (e,g) and the hippocampus (f,h), but not in the thalamus (Th). Scale bar = 200 μm.

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