

α-DBH-Saporin spares DA cells and 5HT cells

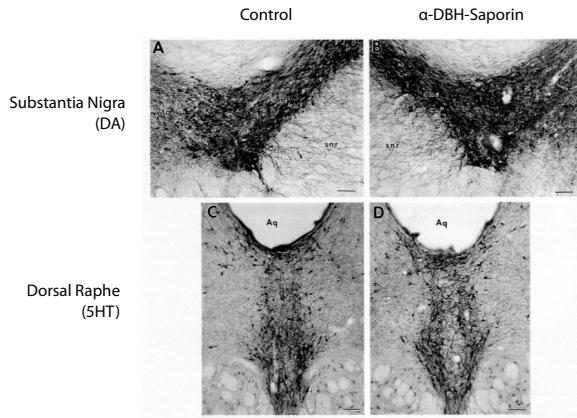
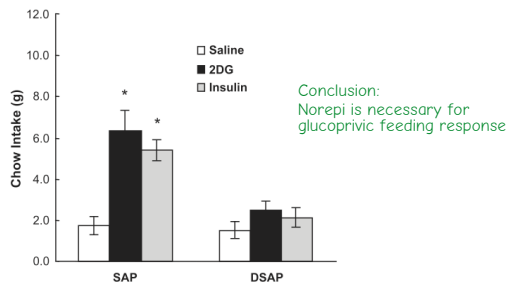


Fig. 6. Effect of α-DBH-sap on other monoaminergic populations. Neurons of the substantia nigra/ventral tegmental area (SN/VTA) and of the dorsal raphe, monoaminergic populations which do not express DBH, are spared by α-DBH-sap. Neurons are stained immunohistochemically using anti-TH. The serotonergic neurons of the raphe stained because the TH antibody cross-reacts with tryptophan hydroxylase. A: SN/VTA, control; B: SN/VTA, 20 μg i.c.v. of α-DBH-saporin; C: raphe, control; D: raphe, 5 μg i.c.v. of α-DBH-saporin. vta, ventral tegmental area; snr, substantia nigra pars reticulata; sn-compacta, substantia nigra pars compacta; Aq, cerebral aqueduct; bars = 100 μm.

α-DBH-Saporin injection into hypothalamus blocks feeding in response to hypoglycemia saporin alone has no effect



Total 4-h intake of pelleted rat food following subcutaneous injection of saline (1 ml/kg), 2DG (200 mg/kg), or insulin (2 units/kg) in SAP control and DSAP-immunoleioned rats. DSAP rats did not increase their food intake in response to either 2DG-induced glucoprivation or to hypoglycemic doses of insulin.

Hudson & Ritter 2004

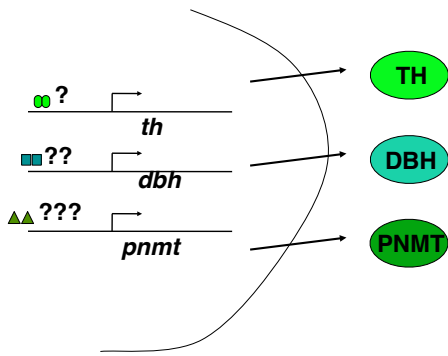
Dopamine and Pet-1 Knock-Out Mice

Transcription Factors (proteins) act at Promoter Elements (DNA) to Enhance/Repress Gene Expression

Tissue-Specific Transcription Factors act at Promoter Elements to Select Gene Expression

Determination of Neuronal Phenotype

There must be tissue-specific transcription factors that drive expression of each catecholaminergic enzyme gene



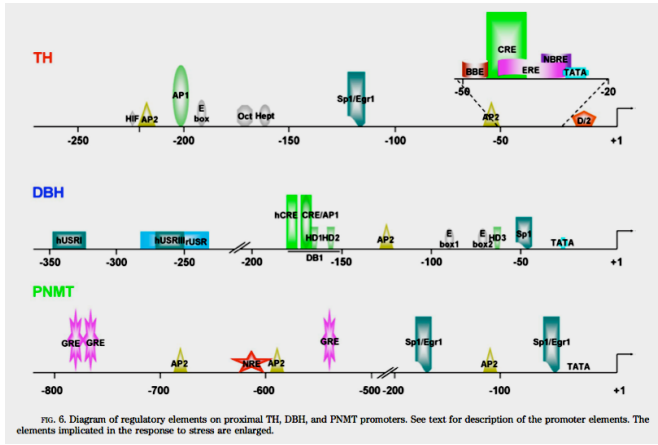
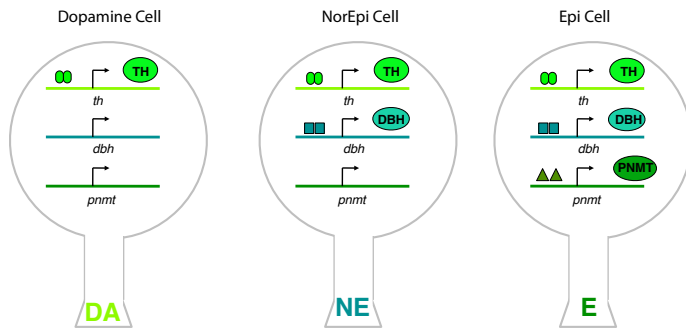


FIG. 6. Diagram of regulatory elements on proximal TH, DBH, and PNMT promoters. See text for description of the promoter elements. The elements implicated in the response to stress are enlarged.

KVETNANSKY 2009.

Determination of Neuronal Phenotype



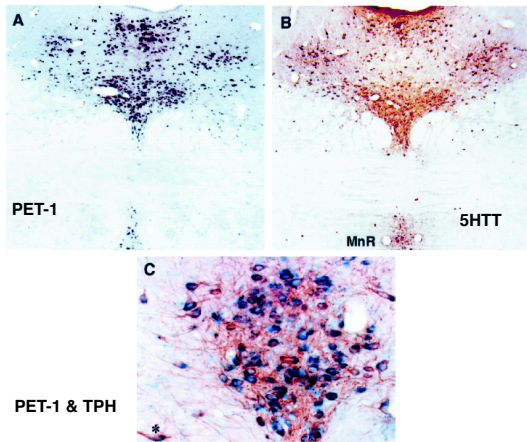
PET-1 as Serotonergic Transcription Factor

PET-1 is colocalized with serotonin cells during development and adulthood.

Serotonergic genes expressed in serotonin cells have PET-1 binding site in promoter.

PET-1 is thought to mediate serotonergic phenotype during differentiation.

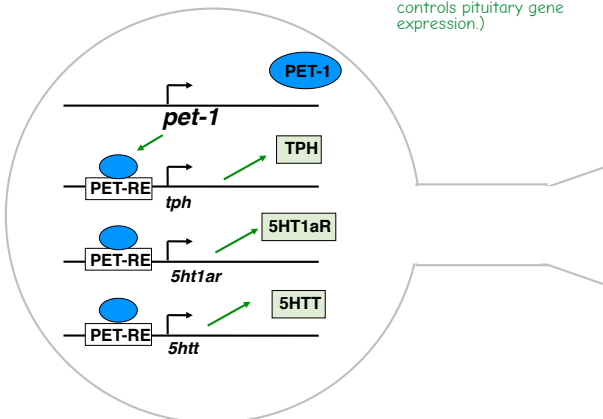
Pet-1 is closely related to Pit-1
(an ETS transcription factor that controls pituitary gene expression.)



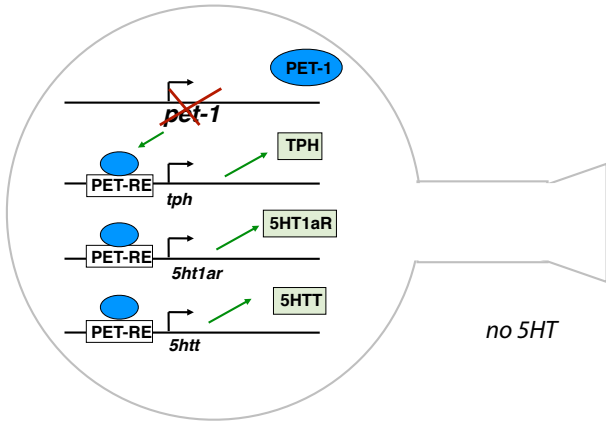
Hendricks et al. 1999

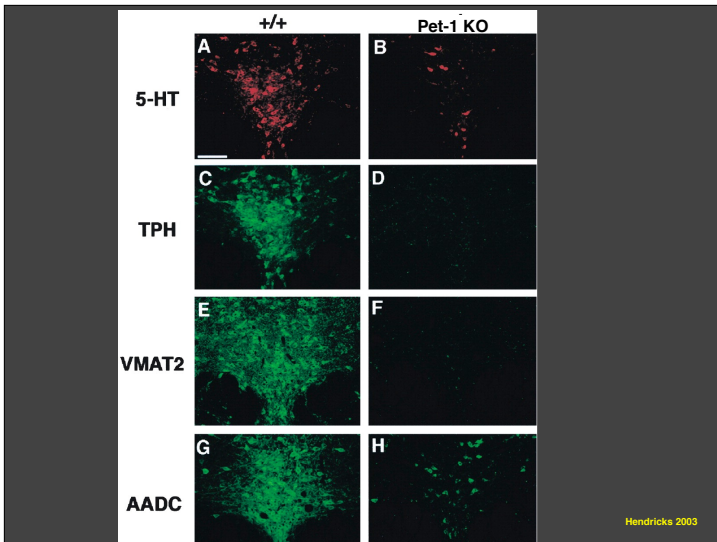
Serotonergic Gene Expression in the Dorsal and Median Raphe

Pet-1 closely related to Pit-1
(an ETS transcription factor that controls pituitary gene expression.)



Knock-Out Pet-1 gene -> no serotonergic cells





Serotonergic Gene Expression in the Dorsal and Median Raphe

