

Validation of a transgenic mouse line with knock down of mGluR5 selectively in dopamine D1 receptor expressing neurons



Ali Nasr Esfahani and David Engblom
IFM Biology, Linköping University, Sweden
Department of Clinical and Experimental Medicine

Introduction:

Striatum, acting in relapse to addiction, mainly comprised of MSNs, D1R- and D2R-expressing neurons.
Metabotropic glutamate receptor 5, mGluR5, is considered to play roles in relapse.
Mouse line mGluR5^{KD-D1} was used to validate the selectively expression of our construct.

Result 1:

Both antibodies work and both markers are expressed in many striatal neurons and not expressed in cortical neurons.

Result 2:

A) **Blue cells** => D1-R and D2-R.

B) **Green cells** => GFP expressed in almost half of the MSNs.

C) **Red cells** => Enkephalin, only in D2-R

D) All MSNs express either GFP or ENK.

Material and Methods:

A) Immunohistochemistry (IHC):

DARPP-32 => all MSNs
Enkephalin => D2R

B) Immunofluorescence (IFC)

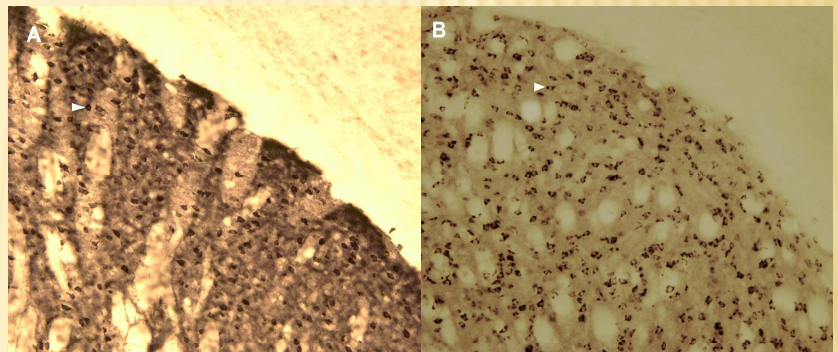


Figure 1. Expression of the MSNs markers in the striatum of an mGluR5^{KD-D1} mouse. A) Detection of DARPP-32 B) Labeling pre-pro Enkephalin (ppENK)

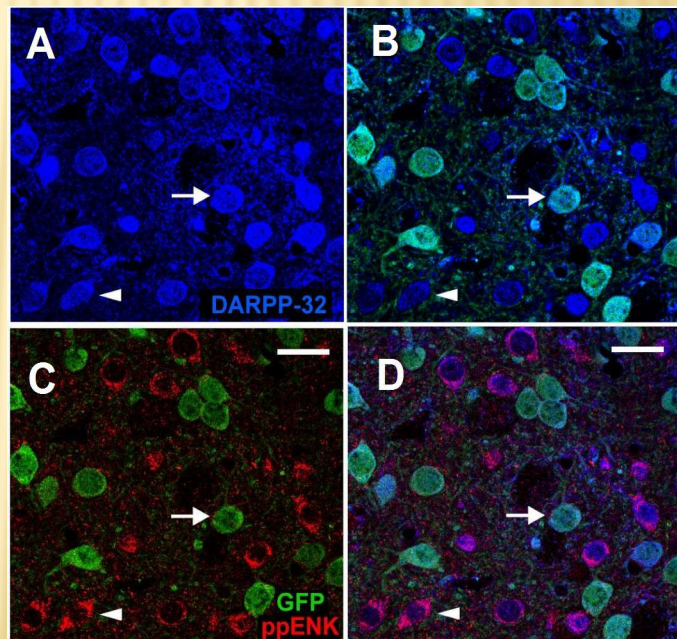


Figure 2. Immunofluorescent labeling showing that the expression of the transgene is selective to D1-MSNs.

Conclusion:

To further study of mGluR5 role in relapse we had to show that our construct is expressed in the proper location. Hence, we showed the expression of the mGluR5^{KD-D1} construct is limited to D1-R expressing neurons as we desired.
To conclude, our experiment shows that the construct in the mGluR5^{KD-D1} mice is expressed accurately.