

Introduction :

Understanding the underlying mechanisms of relapse to cocaine addiction is one of the issues in its treatment.



Striatum, playing roles in relapse, is mainly comprised of medium-sized spiny neurons (MSNs) which are divided into D1R and D2R expressing neurons.

Metabotropic glutamate receptor 5 (mGluR5) is also considered to play roles in relapse.

To observe the function of mGluR5 in D1R neurons, a novel mouse line, mGluR5^{KD-D1} was used.

We aimed to show if the construct is expressed only in D1R- and not in D2R-expressed neurons.

Methods:

Immunohistochemistry (IHC): Free floating immunohistochemistry was performed to achieve good specificity.

Immunofluorescence (IFC): To detect colocalization of the proteins of interest, free floating triple staining was performed.

Result 1:

MSNs markers are detectable by DAB Staining

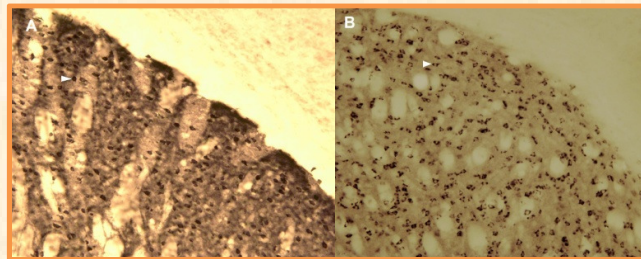


Figure 1.

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

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.

Results 2:

The mGluR5^{KD-D1} is only expressed in D1-R expressing neurons:

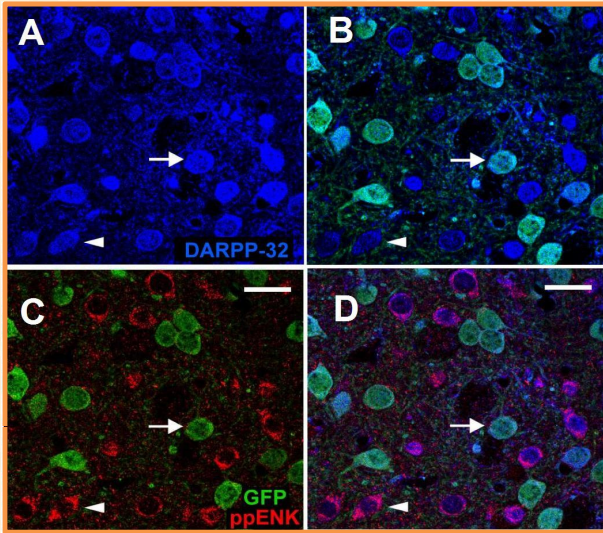


Figure 2.

A) **DARPP-32** was detected in all D1R and D2R.

B) **GFP** which is introduced into the transgenic mice under D1R promoter was only detected in around half of the MSNs.

C) **Enkephalin**, only expressed in D2R, labelled in almost half of the MSNs. No green and red cell bodies colocalized.

D) All blue cells express either red or green markers but no colocalization of red and green is found.

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

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