

Does lentivirus work with neurons?

Gene expression in primary neurons under different promoters in lentiviral vectors

Most Lentiviruses use VSVg as the envelope protein, so the DNA can be delivered into primary cortical neurons. Gene expression level using lentivirus as a gene delivery mechanism depends on the promoter that drives the gene.

1. Optimal promoter usage for lentiviral vector-mediated transduction of cultured central nervous system cells. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2864797/pdf/nihms191595.pdf>
2. Efficient gene transduction of neurons by lentivirus with enhanced neuron-specific promoters. <https://www.nature.com/gt/journal/v14/n11/full/3302924a.html>
3. Optimizing Promoters for Recombinant Adeno-Associated Virus-Mediated Gene Expression in the Peripheral and Central Nervous System Using Self-Complementary Vectors. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3177952/>

In primary cortical primary neurons

- Under a CMV promoter, gene expression is very poor
- Under a Ubiquitin C promoter, gene expression is very high
- CBh and synapsin promoters also work well in primary neurons.

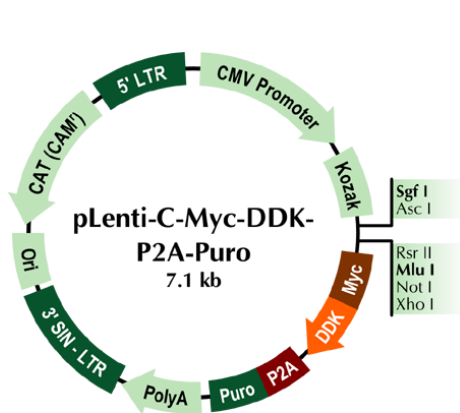
Neuroblastoma cell lines and CMV promoter

For neuroblastoma cell lines, such as Sh-SY5Y, SKNMC, SKNAS, KELLY, IMR32, LAN1, CMV promoter works well.

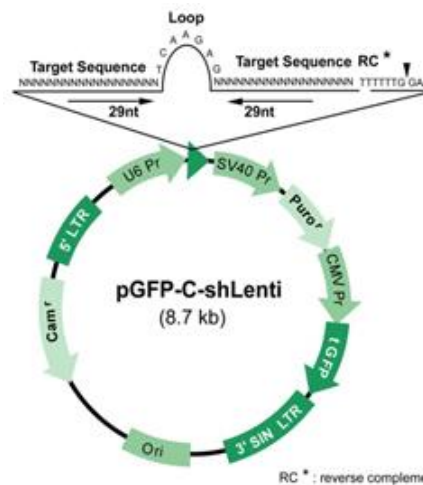
For the shRNA lentiviral vector

GFP is under CMV promoter, but shRNA is under U6 promoter, so even if the cells are not green in primary neurons, the shRNA might still be expressed.

Note: OriGene can provide customer lenti-ORF expression vectors with custom promoters for best expression in primary neurons. Please contact our technical support team: techsupport@origene.com



Lenti-ORF expression vector



Lenti shRNA vector