

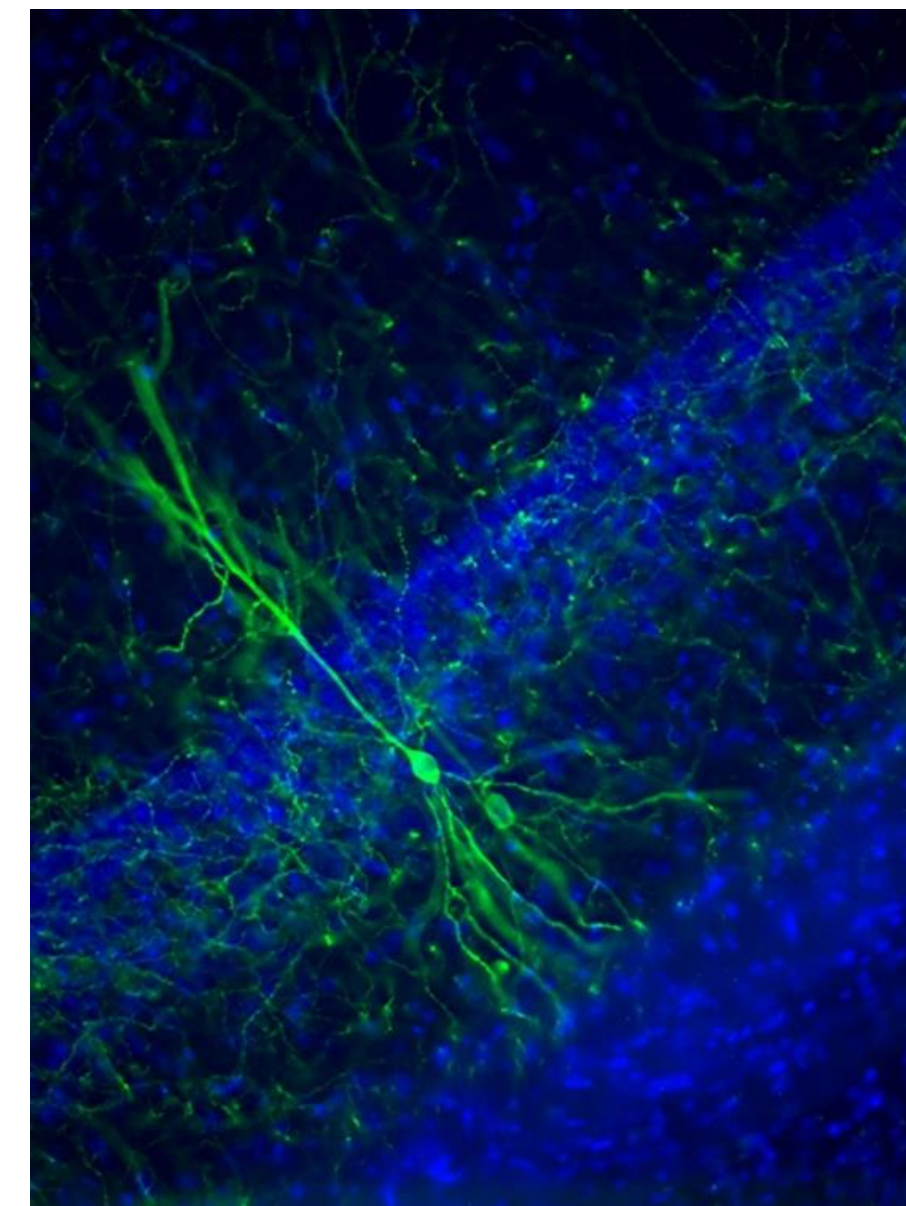
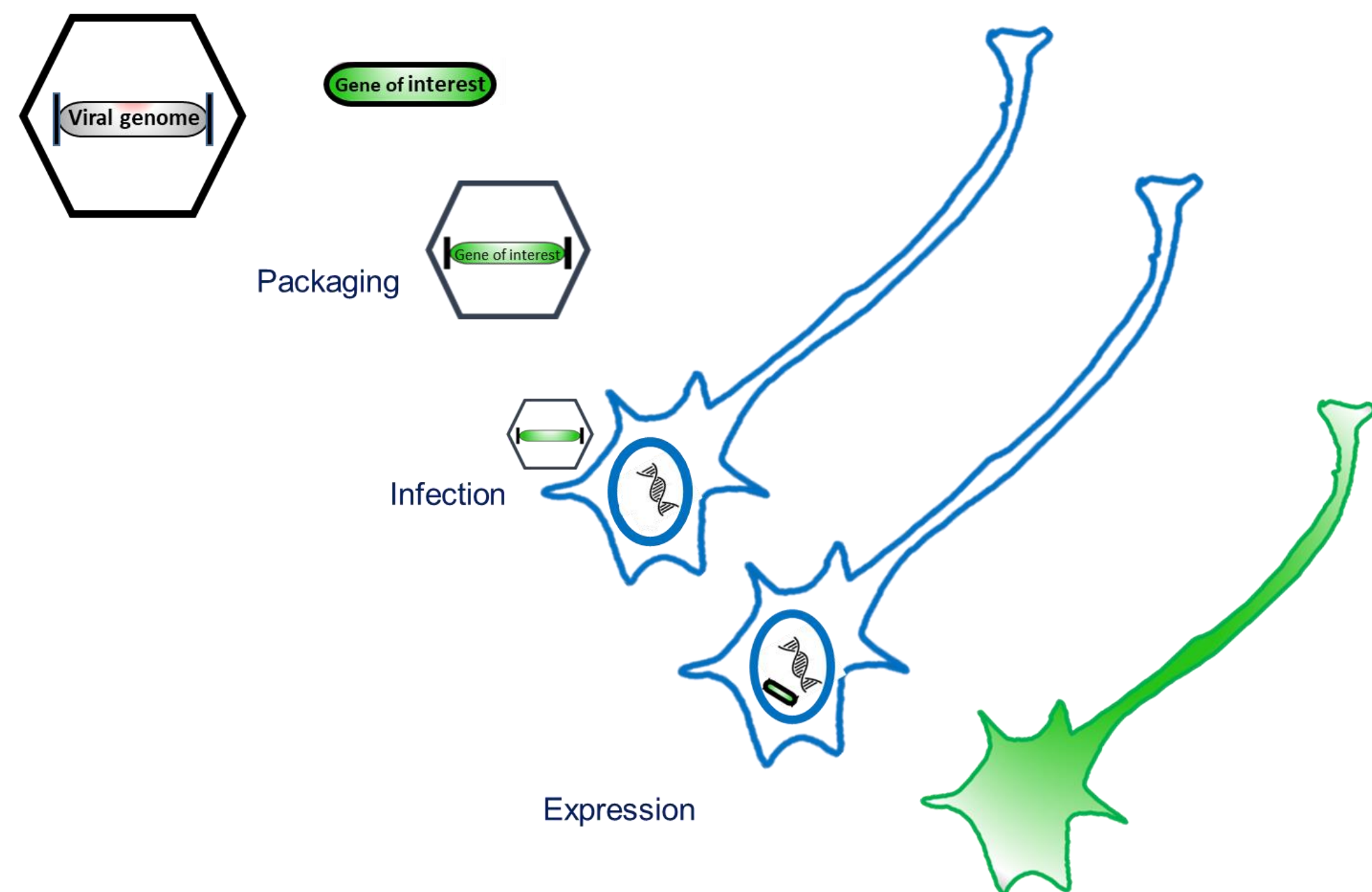
## Neurotropic Vectors Unit

Cristina García Frigola

Instituto Neurociencias-CSIC-UMH ([vectores@umh.es](mailto:vectores@umh.es))

### What are Neurotropic Vectors?

Viral based tools used in Neuroscience that consist on disabled viruses that:

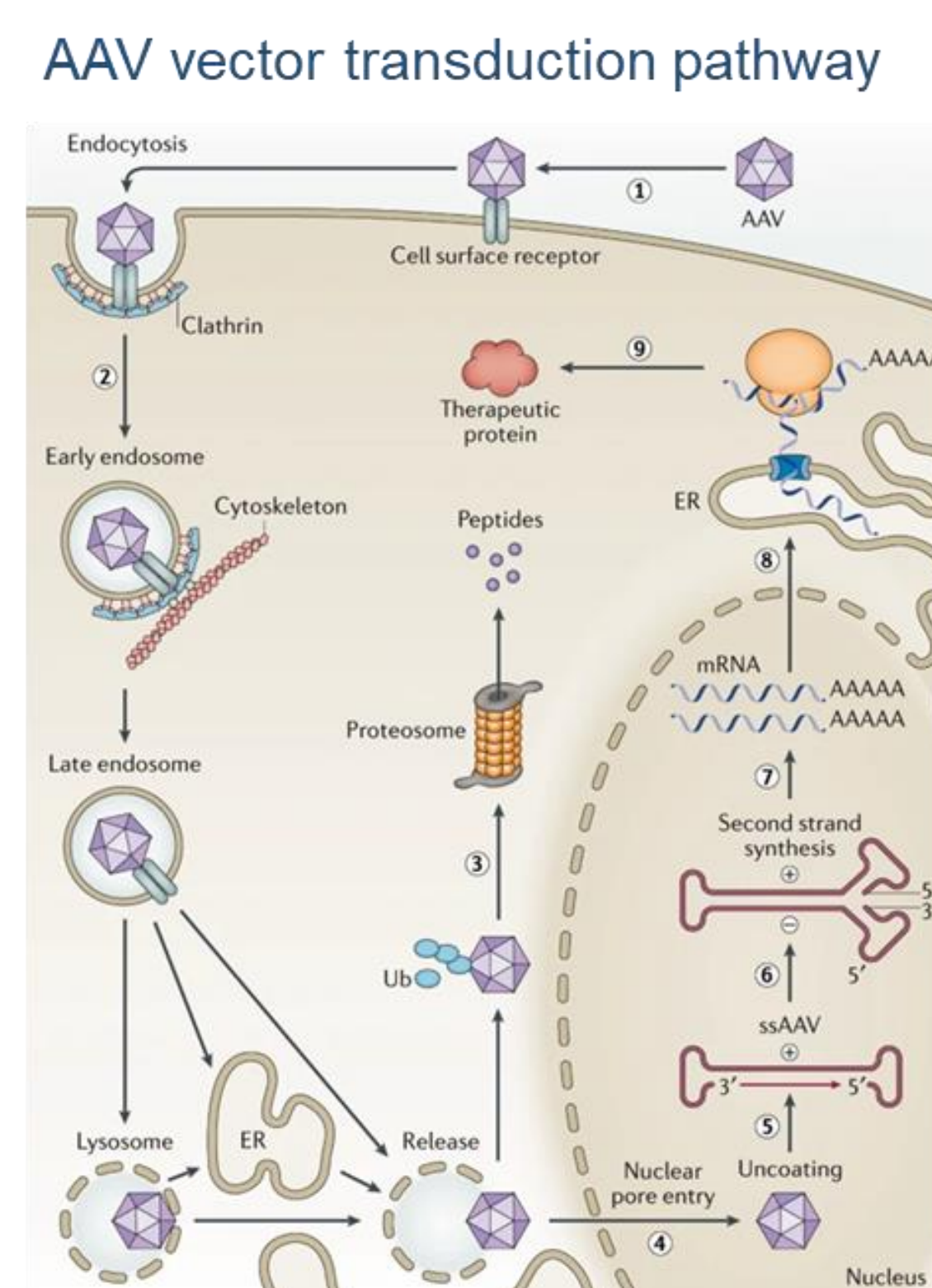


- Infect your cell of interest
- Do not replicate
- Do not interfere with the cells metabolism
- Deliver your gene of interest

### What is the Unit offering?

#### Adeno-associated virus based vectors (AAV)

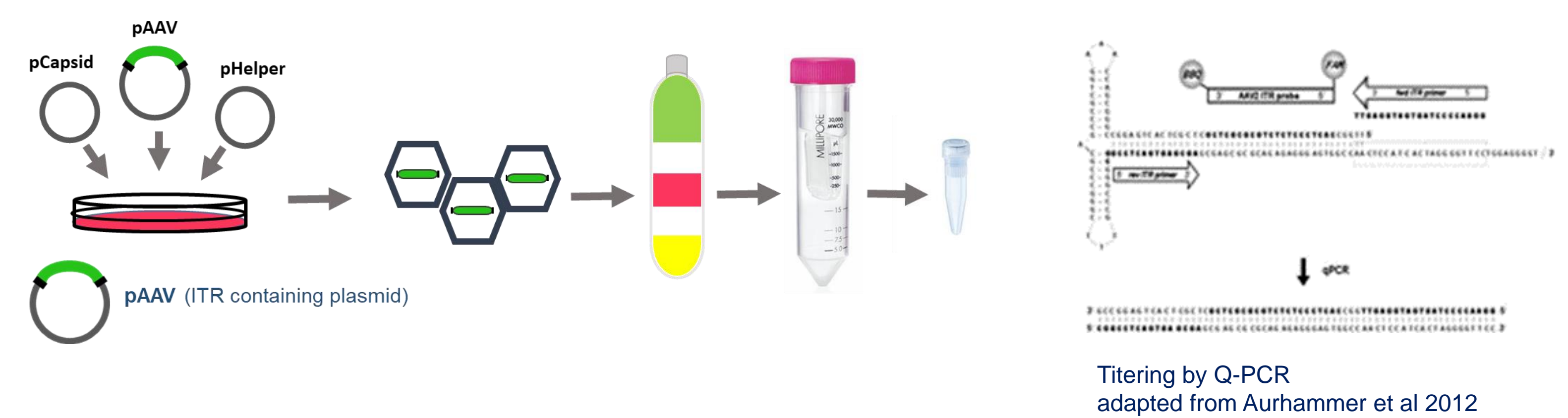
- Infection of dividing and non-dividing cells
- Several serotypes with different tropisms
- Long-lasting transgene expression, not integrating into the genome (mostly)
- 4.5-4.7kb DNA uptake capacity
- ssDNA genome
- 20-25nm capsid size
- Biosafety level S1 for recombinant viruses



Li and Samulski 2020

### Our protocol

(Modify from Samulski's lab)



Titring by Q-PCR  
adapted from Aurhammer et al 2012

### What do you need before ordering?

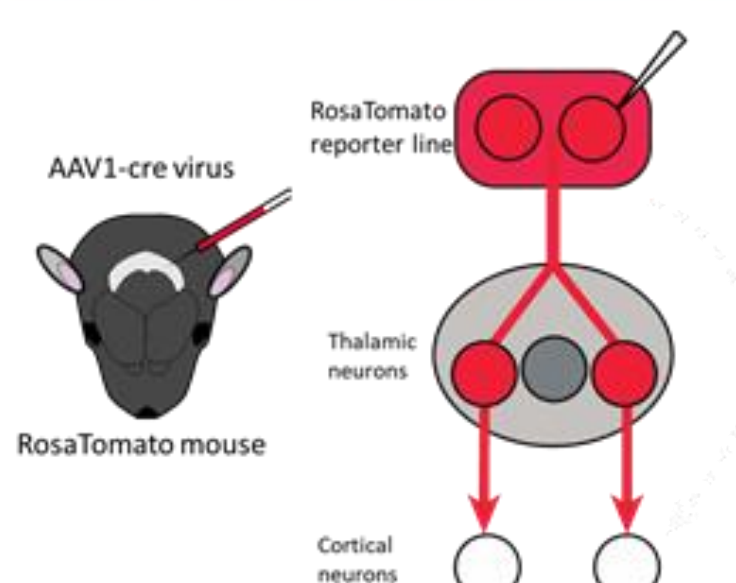
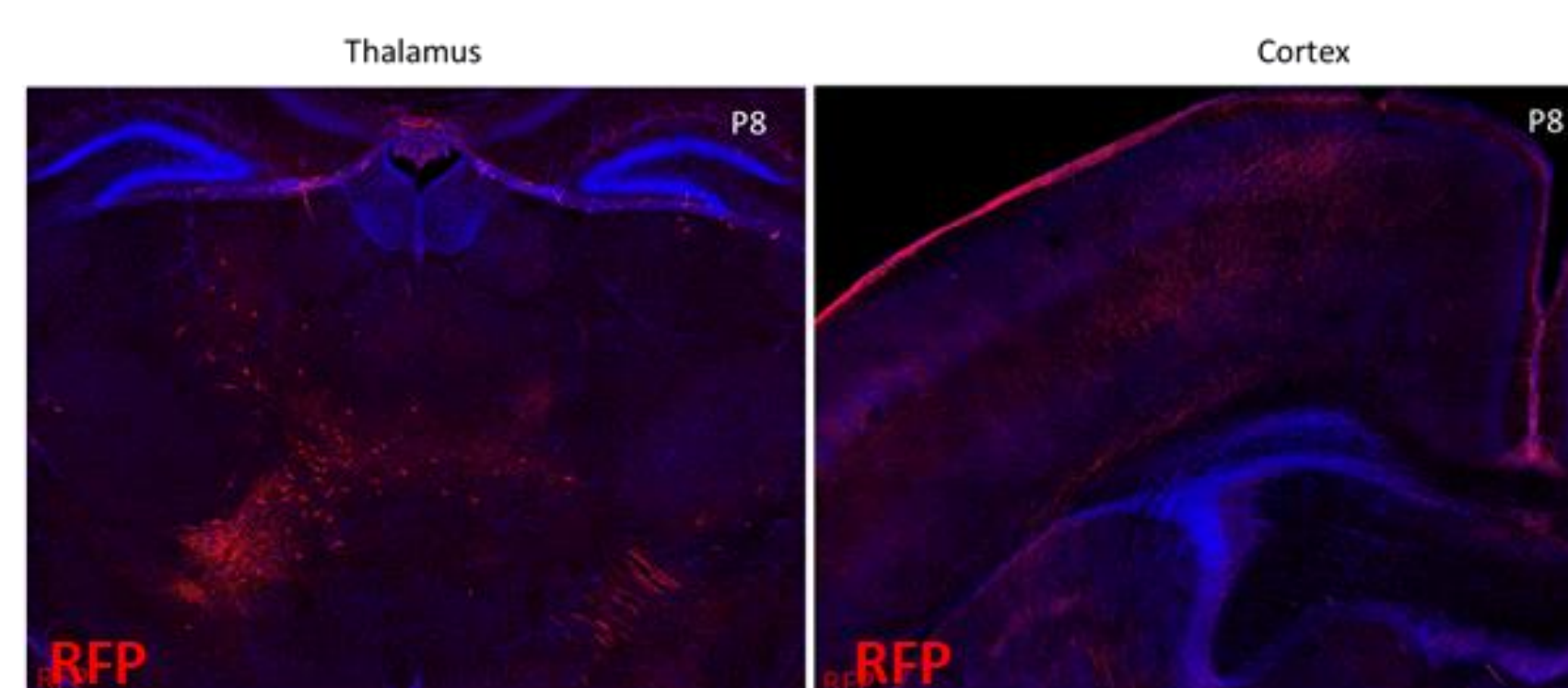
- Design /buy plasmid of interest
- Choose a serotype (according to tropism)
- Obtain approval to use AAV by the corresponding Biosafety and Bioethics Committee

### Neurotropic vectors applications

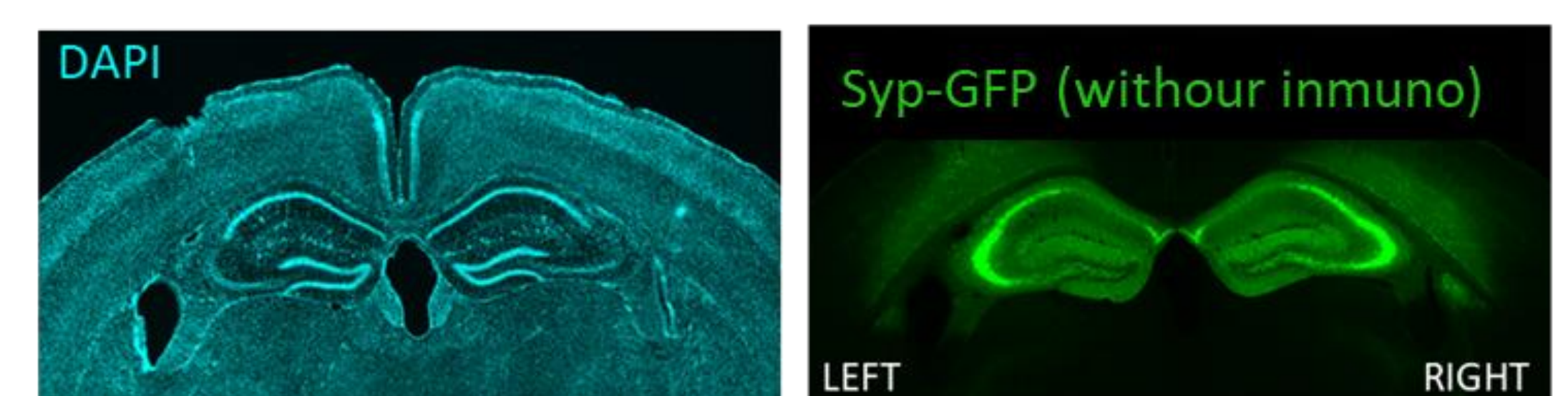
- Optogenetics
- Chemogenetics
- Anatomical tracing
- Reporter expression
- Downregulate gene expression
- Express genes of interest:  
(Neuromodulator sensors,  
Calcium indicators...)

### Clinical applications:

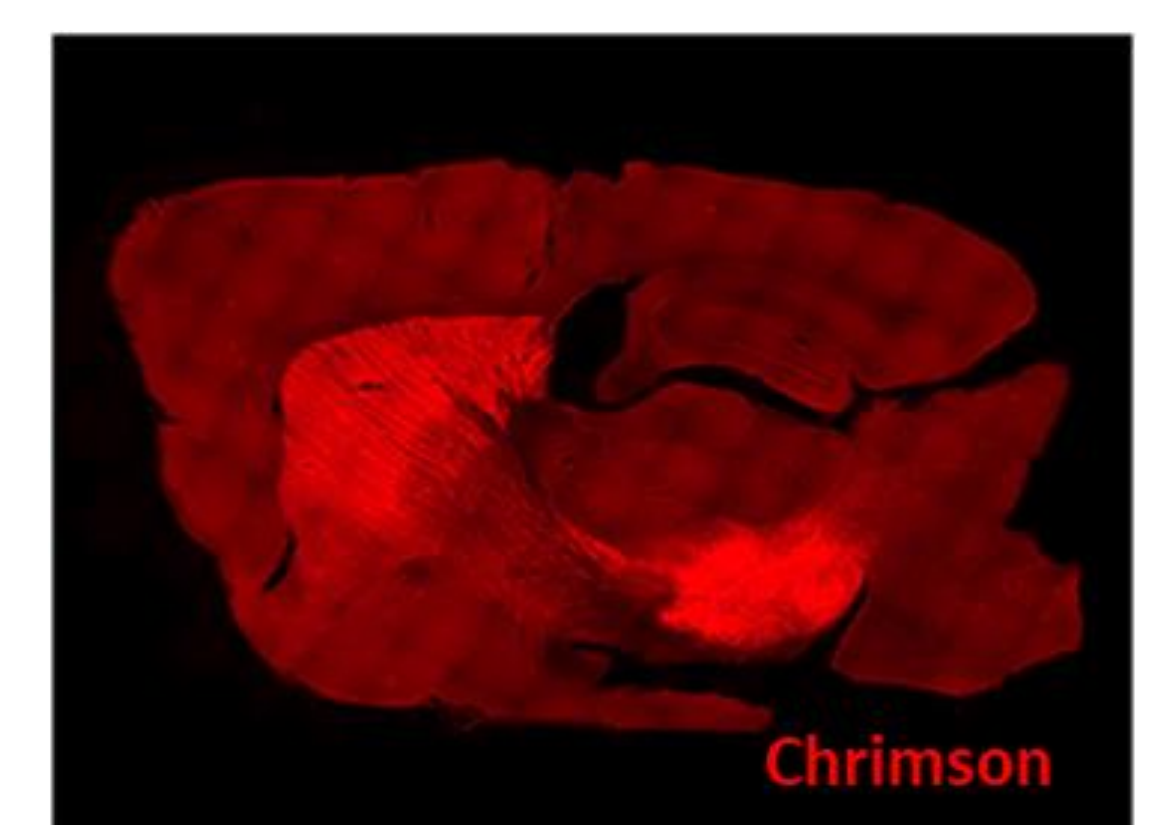
- Gene therapy (on going clinical trials)



Courtesy of Raquel Murcia (Moreno lab)



Courtesy of Ana Navarro (Wesseling lab)



Courtesy of María Saez (Reig lab)

You can contact us at: [vectores@umh.es](mailto:vectores@umh.es)

<https://in.umh-csic.es/es/el-instituto/servicios/vectores-neurotipicos/>