

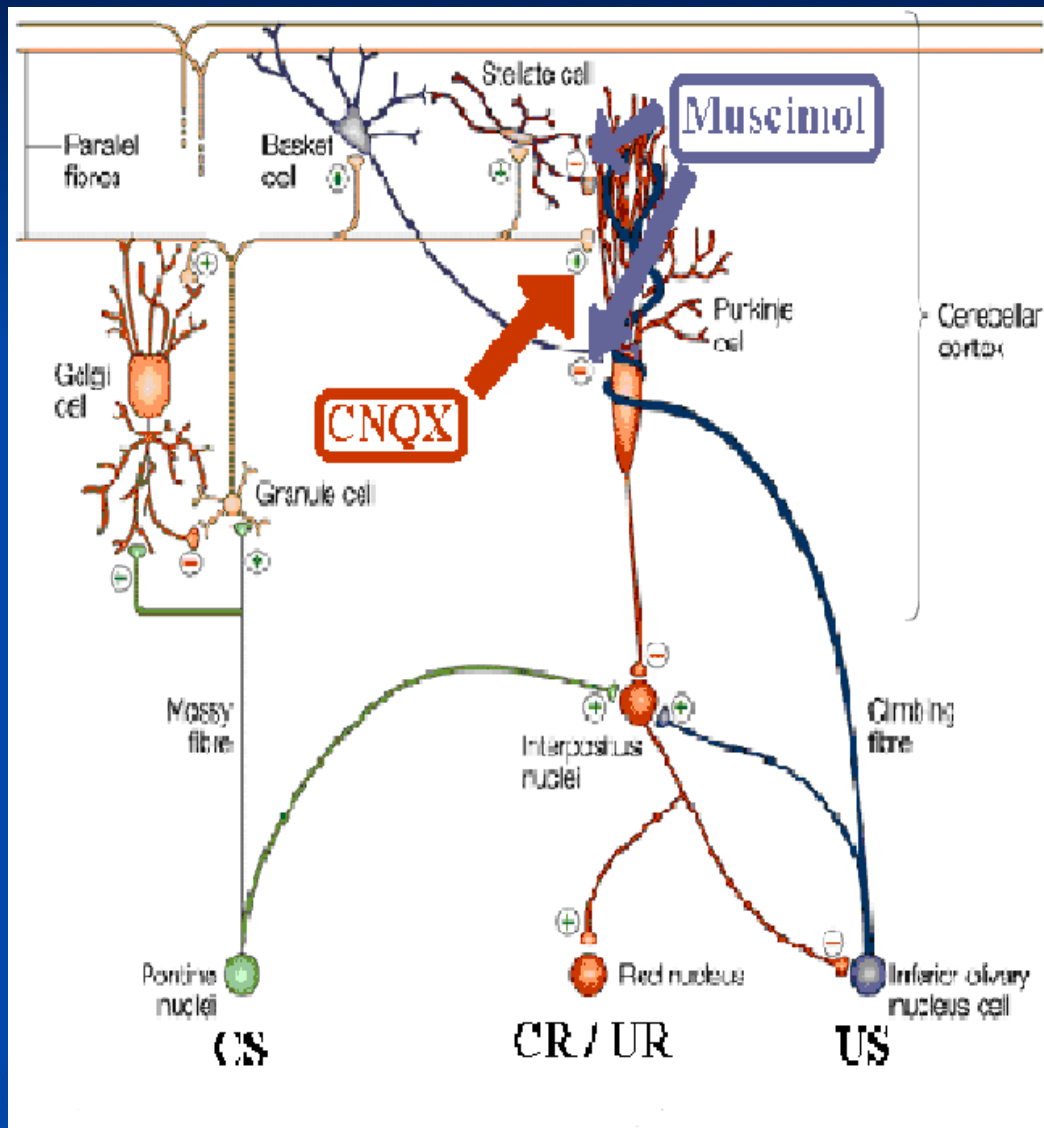
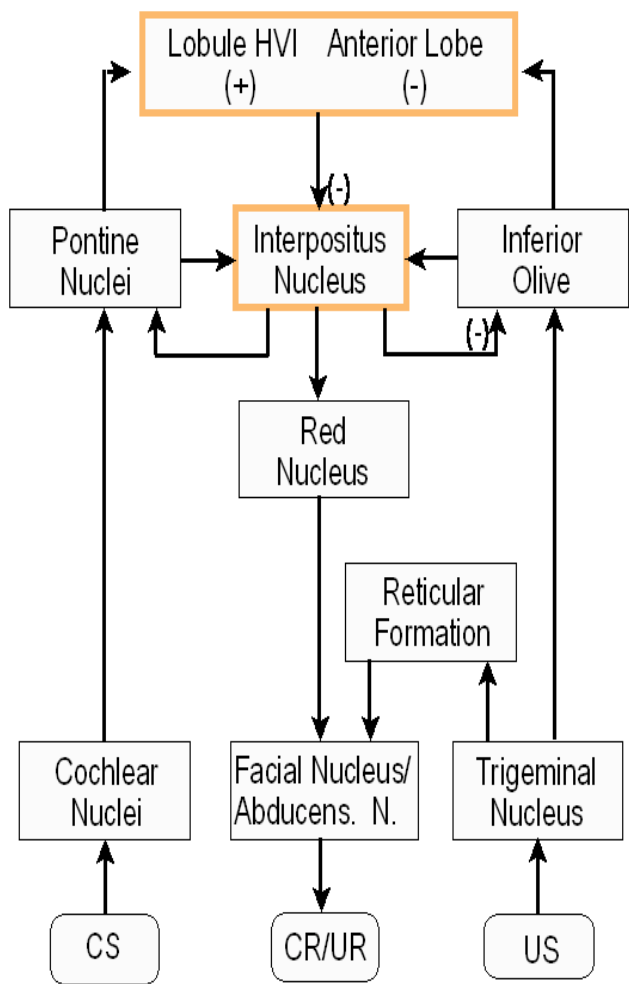


CNQX & Muscimol  
Infusions in the  
Anterior Cerebellar  
Cortex and Classical  
Eye-Blink  
Conditioning

# Background

- The **anterior cerebellar cortex** is a key component in **classical eye-blink conditioning**.
- The **AMPA** receptors are connected to the **purkinje cell positively**, while the **GABA<sub>A</sub>** receptors are connected **negatively**.
- **Muscimol = GABA<sub>A</sub>** (negative connection)  
**Agonist** (strengthens connection)
- **CNQX = AMPA** (positive connection)  
**Antagonist** (weakens connection)

# The Pathway



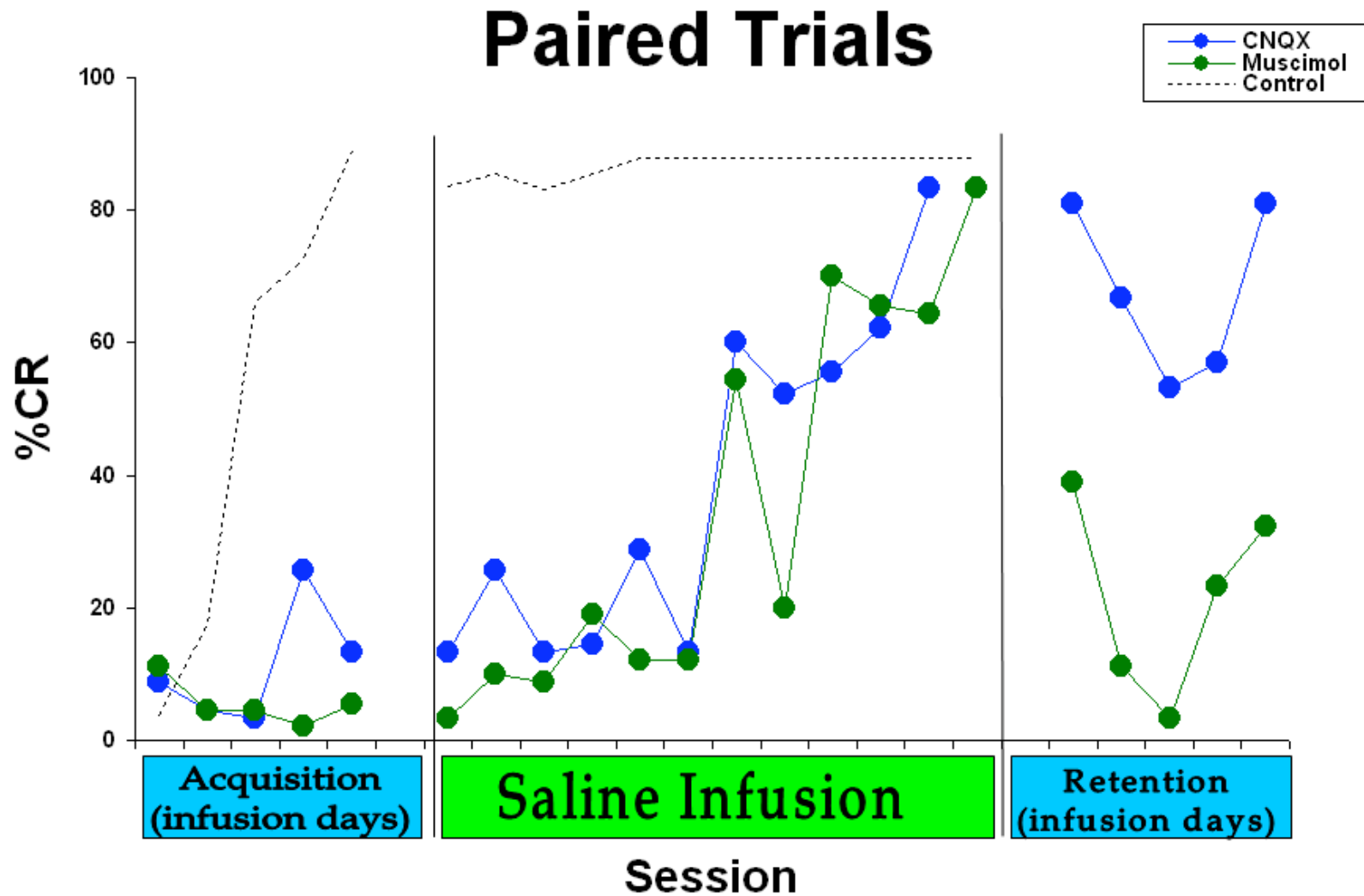
# Setup

- 16 male New Zealand albino rabbits
- Implant cannula in anterior lobe of the cerebellar cortex
- Connect an EMG eye-wire on the left eyelid.
- Run 120 trials per day (90 CS/US, 20 CS only, & 10 US only).
- 8 rabbits in the CNQX group, 8 rabbits in the AMPA group

# The Trials

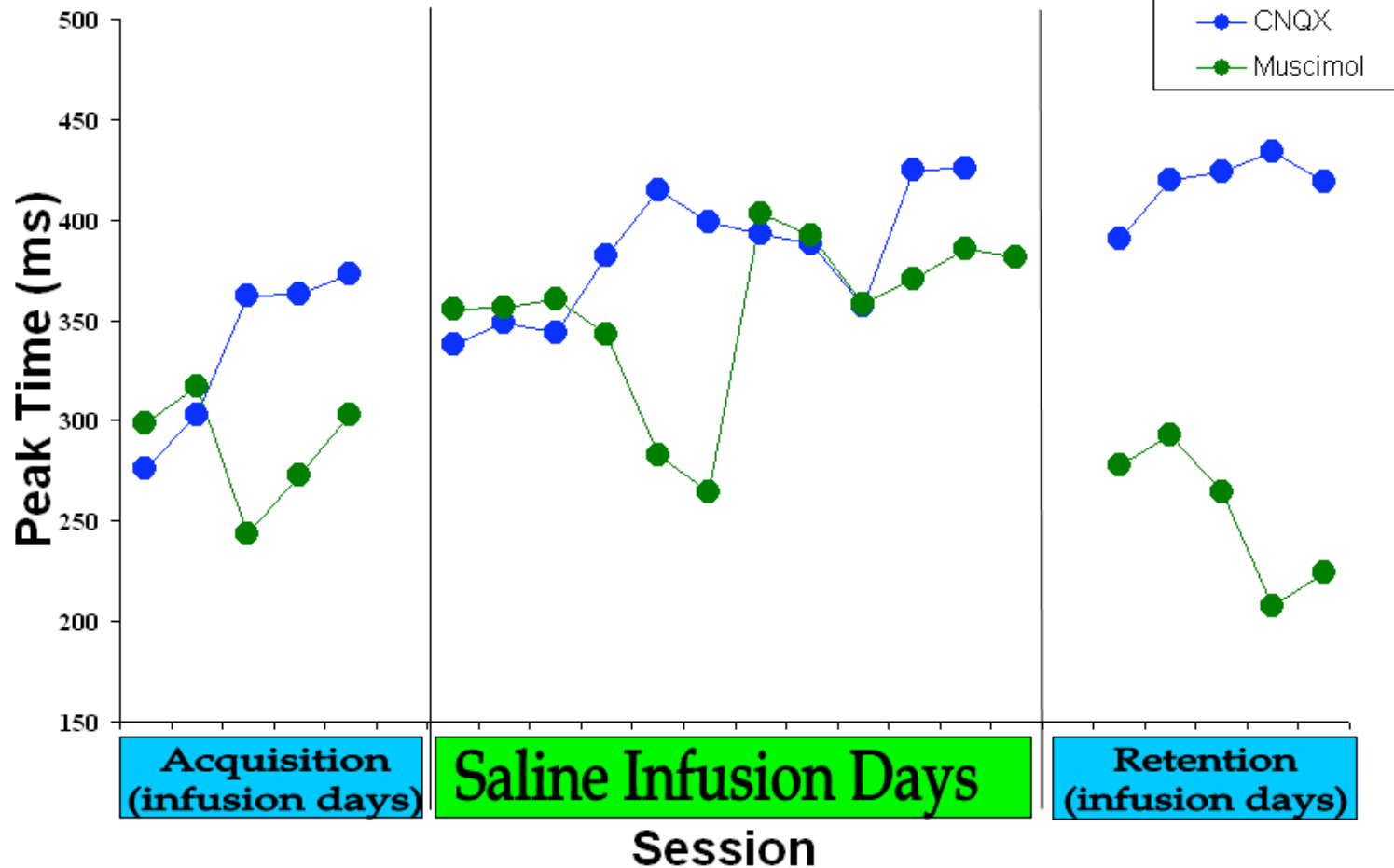
- 5 days of drug infusion to look at the drugs' effects on the acquisition of the learning.
- 15 days of saline to look at after effects and to bring the learning level up to asymptotic learning level.
- 5 final days of drug infusion to look at the drugs' effects on the retention of the learning.

# % of correct Conditioned Responses



# Peak Time of Conditioned Responses

## Paired Trials



# Findings

- Both drugs retarded acquisition of the learning and the effects passed on for many days after the infusions.
- Muscimol showed to have a timing effect in the retention of the learning.
- CNQX showed no effect on retention of the learning.



# Resources

- Chen, G. and Steinmetz, J.E.(2000) Brain Res. 887, pp147-156.
- Katz, D.B. and Steinmetz, J.E.(1997) Learn. Mem. 4, p88-104.
- Lavond, D.G., Steinmetz, J.E.(1989) Behav. Brain Res. 33(2), 113-164.
- Thanks to Dr. Steinmetz, Tim Felton, Greta Sokoloff, and the rest of the NOVL lab.