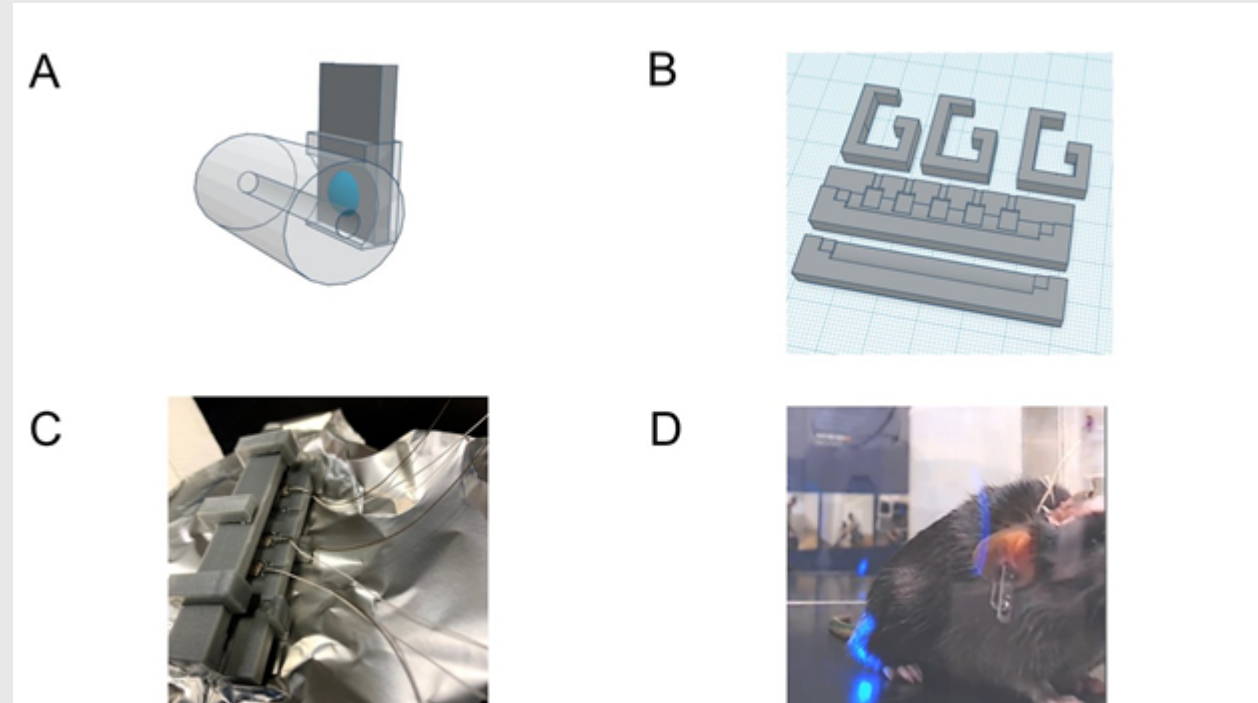
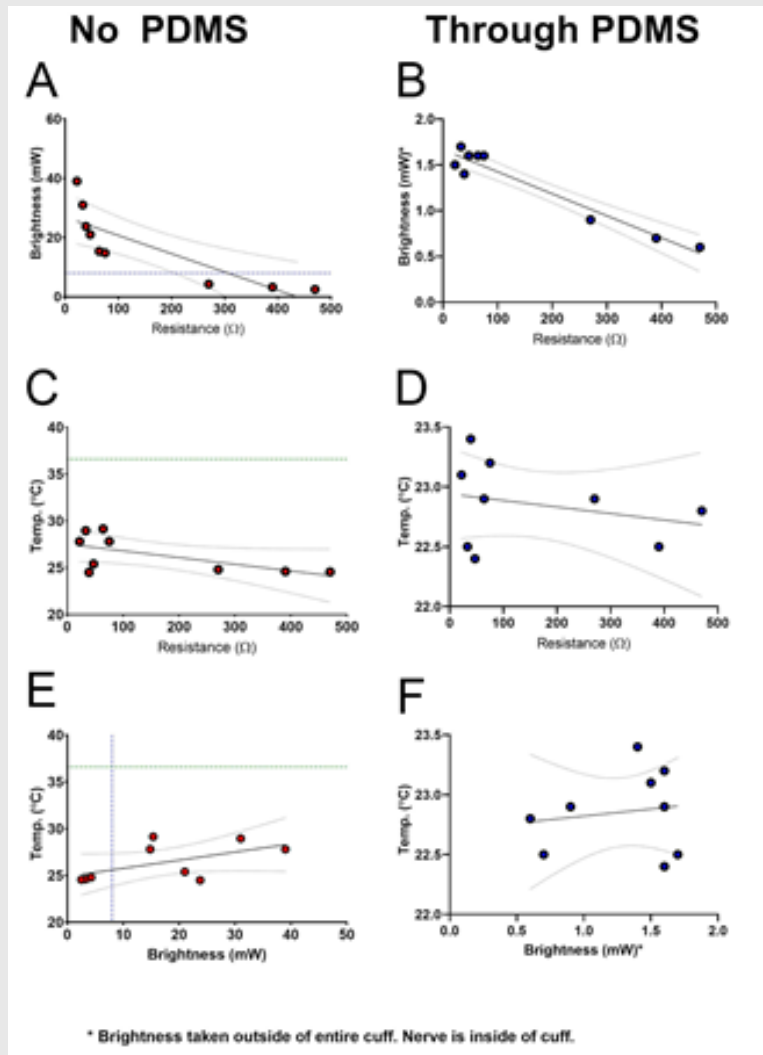




SCALABLE OPTOGENETIC MODULATION OF  
PAIN:  
A NOVEL IMPLANT FOR NOCICEPTIVE  
STIMULATION OF THE SCIATIC NERVE

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# An Implantable Optogenetic Nerve Cuff



**Figure 1. Nerve cuff PDMS mold**

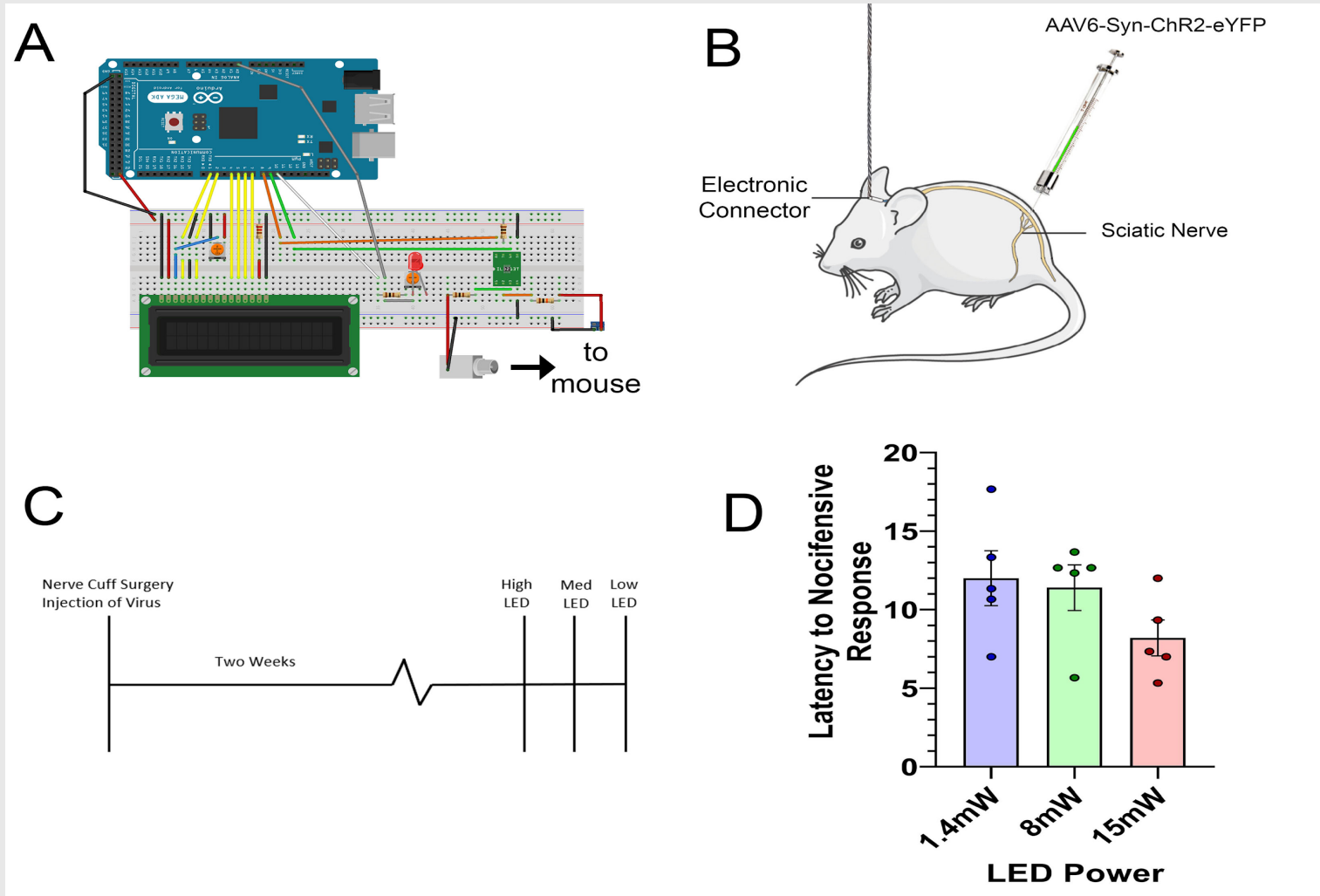
A) Consists of a 3D rendered model of the LED nerve cuff. The nerve cuff would be placed around the sciatic nerve, in the 1mm diameter opening that can be seen.

B) 3D printed mold for PDMS and nerve cuff.

C) Blue LEDs would be soldered to wires and placed into the 3D printed mold with PDMS.

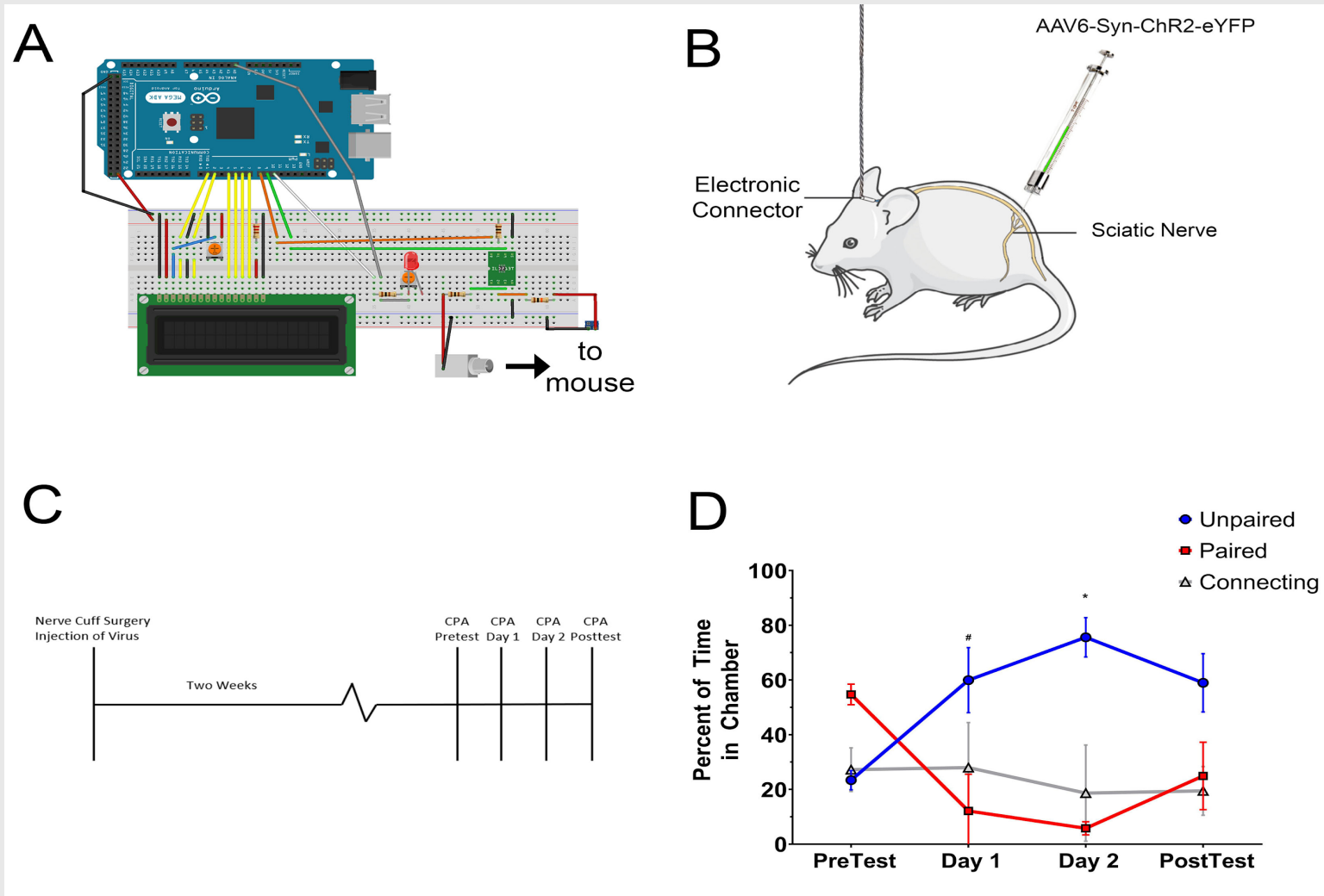
D) Once cured, this cuff would be ready for implantation. This is an image of an activated nerve cuff.

# Increasing Light Intensities Increases Pain Response



**Figure 3-  
Activation of the  
LED cuff to elicit  
paw withdrawal.**

# Animals Avoided Painful Light Stimulation



**Figure 4. Conditioned Place Aversion by Pairing LED activation.**