**Key Component List**

* 1x Arduino board. Arduino Uno was validated, however any USB interfacing board that has digital I/O pins with PWM should work.
* 1x BD135 transistor.
* 2x 12V CREE LEDs (High intensity to stimulate PMR).
* 1x Power pack for CREE LEDs (AA-0594), input 9-30V, output 700mA.
* 12x 3 strip flexible 12V adhesive white LEDs (ZD0577) for LPR stimulus lighting (36 total LEDs).
* 1x ZS-X4B Hardwired PWM, with 3-15V circuit soldered to allow to run on 12V.
* 1x flexible 12V adhesive IR (850nm) LEDs (LM3528-WN60) for orthogonal IR lighting (24 total LEDs).
* 1x Micro camera stand for CREE LEDs.
* 1x Standard 12V power supply.
* 1x Laser cut PMMA construction base as per below assembly instructions.

**Assembly instructions**

1. Laser cut all PMMA components. The design for all components that were laser cut are included as .dxf files. These files are already scaled and should be usable by any laser cutter. Always ensure the laser cutter control program correctly imports the layout and the colour should be changed depending on specific cutting settings for thickness of PMMA. Ensure standard safe operating procedure of the laser cutter.
2. Edge components for the base construction need to be layered and thermally bonded as follows, from inside to out, 2x 1.5mm long, 4.5mm long, 4.5mm outer long and 2x 1.5mm short, 4.5mm short, 4.5mm outer short. The thermal bonding method is described in the supplementary.
3. Once these are bonded every piece will slot together with the base to form the overall construction – this can then be chemically bonded.
4. Included in the .dxf files are the custom plate designs. These are simple two layer thermally bonded constructions, the top layer with the holes and the bottom layer with a standard rectangle.
5. Included in the .dxf files are CREE LED brackets for connection to the micro stand, these will have to be altered depending on the stand.
6. The orthogonal IR LEDs can be adhered to the upper edge (4.5mm outer PMMA layer) of the base construction, ensuring the centre of the LEDs align with the centre of the embryo plate when located.
7. The 12 LPR 3 strip LED sections can be wired together and adhered to the baseplate of the base construction, ensure the wiring exits via one of the allocated holes in the edge design.
8. The orthogonal IR LEDs are to be wired into the hardwired PWM (to allow dimming in the background lighting) and the PWM connected to the 12V power supply.
9. The Arduino Uno should be wired to provide a 3.3V control signal to the BD135 transistor (acts as a switch). The BD 135 transistor is connected in a standard simple transistor circuit with the 12V supply that can be wired with removable connections to either the above CREE LEDs (for PMR) or the below white strip LEDs (for LPR).

For further assistance, information or collaboration please contact the [Neurotox Lab](https://www.neurotoxlab.com/) at RMIT.