Criteria for the *in vitro* closed loop stimulation box

1. The box must be able to read in the real time signal recordings from electrodes inserted into brain tissue.
2. The box must be able to apply closed loop algorithms based on the incoming signals.
3. The box must be able to manipulate the LED based on the algorithm output.
4. The box must have the capacity for a user to vary the experimental conditions, including:
   1. The stimulation phase
   2. The frequency of the stimulation kernel
   3. The gain/ intensity of the chosen algorithm
   4. The time period for a given stimulation condition to be on
   5. The time period between stimulation conditions
   6. The box must be programmable to allow the implementation of novel algorithm designs.
5. The box must be able to save for future processing, in a format readable by Matlab:
   1. The incoming signals, as recorded by the box
   2. The outgoing light response over time
   3. The phase condition used over time
   4. The parameter settings for the given recording
6. The box must adhere to basic safety expectations, and not unexpectedly explode or combust.