Light Stimulate Neural Gate – Application of Optogenetics Apparatus

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Recently, the optogenetic technology has been paying much attention. We proposed using a universal optogenetics system for preliminary experiments on motor neuron and phantom object. We complete a series of experiments by establishing a high-efficiency apparatus with phantom objects based on LED die, which is mainly by low-cost component to achieve the critical experiments to verify the feasibilities. Our device is capable of exploring the factors of optogenetics technology. The completion of system and the results of cell experiments, show the combination of optical engineering and advanced neuroscience topics. In this poster, we will pay attention to the construction of the factor analysis model, the effects before and after the photo-stimulating, and the measurement of the membrane potential through the photo-stimulating. Based on the present apparatus and the phantom object, the concept to build a neuron based logic gate (such as AND, OR, XNOR, NAND) by considering the photo-stimulating and membrane potential will be demonstrated.


Fig.1 Photo stimulate Neural Gate