DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

National Institutes of Health
National Eye Institute
Bethesda, Maryland 20892

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Dear Dr. Aaron Berard,

Thank you for your invitation to submit our protocol entitled “Direct coupled electroretinogram (DC-ERG) for recording the light evoked electrical responses of the mouse retinal pigment epithelium” for consideration for publication in JOVE.

In contrast to the more common electroretinogram recordings the DC-ERG measures retinal pigment epithelium function, which plays a critical role in the pathology of many forms of retinal degeneration. The retinal pigment epithelium (RPE) is a specialized monolayer of cells strategically located between the retina and the choriocapillaris that maintain the overall health and structural integrity of the photoreceptors.

The technique we describe is a variation based on Wu et. al 2004 (“Light-Evoked Responses of the Mouse Retinal Pigment Epithelium). We have added an additional step in preparing the recording electrodes that has greatly improved the stability (reducing noise and drift) and the reproducibility of the recordings. In addition, we provide downloadable files that include our light stimulation protocols for a ganzfeld stimulator (Diagnosys, LLC) and also MATLAB scripts for rapid analysis of the DC-ERG recordings. To demonstrate the technique and the analysis workflow we include previously unpublished data showing representative results in a mouse model of retinoschisis (RS1 KO).

We hope this protocol earns your favorable consideration. Please let me know if there are any questions or concerns.

Yours sincerely,

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