Electroretinography 3 JAX_ERG_003

Purpose

Full-field electroretinogram (ERG) is a mass electrical response of the retina to a light stimulus. The ERG contains four components: a-wave, b-wave, c-wave and FO-wave. These four components reflect the responsiveness of retinal photoreceptor cells and other neurons as a measure of visual function.

Experimental Design

- **Minimum number of animals :** 4
- **Age at test:** Week 15
- **Sex:** We do not expect the results of this test to show sexual dimorphism

Equipment

Celeris - Diagnosys LLC

Procedure

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1. Transfer mice from the animal room to the testing room.
2. Mice are dark adapted overnight (alternatively: minimum of 2 hours) for testing procedures.
   a. All rod testing procedures are done under dim red light after a minimum 2-hour dark adaptation period

- Following dark adaptation one drop of an appropriate mydriatic solution is applied to each eye to induce pupil dilation.
- Once the pupils have dilated mice are anesthetized with the inhalation of 2% Isoflurane.
- When the mouse has reached the proper plane of anesthesia, the mouse is placed on a heated platform and the nose is placed in the nose cone for continuous anesthetic inhalation.
- An appropriate opthalmic lubricant is applied to the electrodes before placing on each cornea.
- The scotopic test is performed with pulsing white light.
- A 3-minute light-adaptation follows before the photopic test is run. At this time an additional drop of opthalmic lubricant should be added to each eye without adjusting the electrodes.
- After 3 minutes of light adaptation, photopic ERGs are obtained with brighter white flashes at varying stimulation intensities.

- Once the photopic test is complete, carefully remove the recording electrodes and apply a generous amount of an ophthalmic gel to both eyes and allow the mouse to recover in a clean heated pen until fully conscious.
- Return the mouse to its home pen.
- Clean the electrodes with sterile water followed by 70% ethanol.
- Save the test results and export to the server.

Notes

Amplitude and timing measures of the ERG waveform are taken:

1. The a-wave amplitude is measured from the pre-stimulus baseline to the lowest negative trough; the b-wave amplitude is measured from the trough of the a-wave to the following highest peak; the c-wave amplitude is measured from the pre-stimulus baseline to the following highest peak; the FO- wave amplitude is measured from the peak of the c-wave to the subsequent lowest trough.
2. Implicit time (t) is measured from stimulus onset to the trough or peak of each wave.

Parameters and Metadata

R-blind JAX_ERG_001_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Options: Yes, No,

L-blind JAX_ERG_002_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** false

Options: Yes, No,

RE-a (uV) [Scotopic] JAX_ERG_003_001 | v1.0

simpleParameter

Req. Analysis: false   **Req. Upload:** true   **Is Annotated:** true

Unit Measured: uV

RE-b (uV) [Scotopic] JAX_ERG_004_001 | v1.0

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Unit Measured: uV

RE-c (uV) [Scotopic] JAX_ERG_005_001 | v1.0

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Unit Measured: uV

LE-a (uV) [Scotopic] JAX_ERG_006_001 | v1.0

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Unit Measured: uV

LE-b (uV) [Scotopic] JAX_ERG_007_001 | v1.0
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Unit Measured: uV

LE-c (uV) [Scotopic] JAX_ERG_008_001 | v1.0
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Unit Measured: uV

RE-a (uV) [Photopic] JAX_ERG_009_001 | v1.0
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Unit Measured: uV

RE-b (uV) [Photopic] JAX_ERG_010_001 | v1.0

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Unit Measured: uV

LE-a (uV) [Photopic] JAX_ERG_011_001 | v1.0

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LE-b (uV) [Photopic] JAX_ERG_012_001 | v1.0

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RE-a (ms) [Scotopic] JAX_ERG_013_001 | v1.0

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Unit Measured: ms

RE-a (ms) [Photopic] JAX_ERG_019_001 | v1.0

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Unit Measured: ms

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Unit Measured: uV

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Unit Measured: ms

LE-FO-like (ms) [Scotopic] JAX_ERG_026_001 | v1.0
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Unit Measured: ms

Comments JAX_ERG_027_001 | v1.0

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Fundus file JAX_ERG_028_001 | v1.0

seriesMediaParameter

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Experimenter ID JAX_ERG_029_001 | v1.0

procedureMetadata

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Stimulus protocol JAX_ERG_030_001 | v1.0

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Topical agents JAX_ERG_031_001 | v1.0

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Software version JAX_ERG_032_001 | v1.0

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SOP version JAX_ERG_033_001 | v1.0

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Stimulator JAX_ERG_034_001 | v1.0

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C-wave (cd.s/m^2) JAX_ERG_035_001 | v1.0

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Photopic ERG (cd.s/m^2) JAX_ERG_036_001 | v1.0

procedureMetadata

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