# Electroretinography 3 JAXLA_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 :** 4M + 4F
- **Age at test:** Week 76
- **Sex:** We do not expect the results of this test to show sexual dimorphism

## Equipment

Celeris - Diagnosys LLC

## Procedure

## Procedure

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 Cyclomydril Ophthalmic Drops 0.2% (alternatively: Cyclopentolate Hydrochloride ophthalmic Sol 1%) is applied to each eye to induce mydriasis.
- 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.
- Goniovisc Ophthalmic Drops 2.5% (alternatively: Refresh Celluvisc) 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 oopthalmic 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 Puralube/Systane 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** JAXLA_ERG_001_001 | v1.0

simpleParameter

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

**Options:** Yes, No,

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### **L-blind** JAXLA_ERG_002_001 | v1.0

simpleParameter

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

**Options:** Yes, No,

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## RE-a (uV) [Scotopic] JAXLA_ERG_003_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## RE-b (uV) [Scotopic] JAXLA_ERG_004_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## RE-c (uV) [Scotopic] JAXLA_ERG_005_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## LE-a (uV) [Scotopic] JAXLA_ERG_006_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## LE-b (uV) [Scotopic] JAXLA_ERG_007_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## LE-c (uV) [Scotopic] JAXLA_ERG_008_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## RE-a (uV) [Photopic] JAXLA_ERG_009_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## RE-b (uV) [Photopic] JAXLA_ERG_010_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## LE-a (uV) [Photopic] JAXLA_ERG_011_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## LE-b (uV) [Photopic] JAXLA_ERG_012_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## RE-a (ms) [Scotopic] JAXLA_ERG_013_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## RE-b (ms) [Scotopic] JAXLA_ERG_014_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## RE-c (ms) [Scotopic] JAXLA_ERG_015_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## LE-a (ms) [Scotopic] JAXLA_ERG_016_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## LE-b (ms) [Scotopic] JAXLA_ERG_017_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## LE-c (ms) [Scotopic] JAXLA_ERG_018_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## RE-a (ms) [Photopic] JAXLA_ERG_019_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## RE-b (ms) [Photopic] JAXLA_ERG_020_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## LE-a (ms) [Photopic] JAXLA_ERG_021_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## LE-b (ms) [Photopic] JAXLA_ERG_022_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## RE-FO (uV) [Scotopic] JAXLA_ERG_023_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## LE-FO (uV) [Scotopic] JAXLA_ERG_024_001 | v1.0

simpleParameter

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

**Unit Measured:** uV

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## RE-FO (ms) [Scotopic] JAXLA_ERG_025_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

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## LE-FO (ms) [Scotopic] JAXLA_ERG_026_001 | v1.0

simpleParameter

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

**Unit Measured:** ms

## Comments JAXLA_ERG_027_001 | v1.0

simpleParameter

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

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## Fundus file JAXLA_ERG_028_001 | v1.0

seriesMediaParameter

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

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## Experimenter ID JAXLA_ERG_029_001 | v1.0

procedureMetadata

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

**Description:** experimenter_id

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## Stimulus protocol JAXLA_ERG_030_001 | v1.0

procedureMetadata

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

## Topical agents JAXLA_ERG_031_001 | v1.0

procedureMetadata

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

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## Software version JAXLA_ERG_032_001 | v1.0

procedureMetadata

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

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## SOP version JAXLA_ERG_033_001 | v1.0

procedureMetadata

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

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## Stimulator JAXLA_ERG_034_001 | v1.0

procedureMetadata

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

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## C-wave (cd.s/m<sup>2</sup>) JAXLA_ERG_035_001 | v1.0

procedureMetadata

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

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## Photopic ERG (cd.s/m<sup>2</sup>) JAXLA_ERG_036_001 | v1.0

procedureMetadata

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

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