

# 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 ophthalmic 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 ophthalmic 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,

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### L-blind JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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] JAX\_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] JAX\_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] JAX\_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] JAX\_ERG\_013\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: ms

RE-b (ms) [Scotopic] JAX\_ERG\_014\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: ms

RE-c (ms) [Scotopic] JAX\_ERG\_015\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: ms

LE-a (ms) [Scotopic] JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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]** JAX\_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]** JAX\_ERG\_022\_001 | v1.0

simpleParameter

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

Unit Measured: ms

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**RE-FO-like (uV) [Scotopic]** JAX\_ERG\_023\_001 | v1.0

simpleParameter



Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: uV

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## LE-FO-like (uV) [Scotopic] JAX\_ERG\_024\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: uV

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## RE-FO-like (ms) [Scotopic] JAX\_ERG\_025\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: ms

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## LE-FO-like (ms) [Scotopic] JAX\_ERG\_026\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: true

Is Annotated: true

Unit Measured: ms

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## Comments JAX\_ERG\_027\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Fundus file JAX\_ERG\_028\_001 | v1.0

seriesMediaParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

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## Experimenter ID JAX\_ERG\_029\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: experimenter\_id

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## Stimulus protocol JAX\_ERG\_030\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Topical agents JAX\_ERG\_031\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Software version JAX\_ERG\_032\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## SOP version JAX\_ERG\_033\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

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## Stimulator JAX\_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>)** JAX\_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>)** JAX\_ERG\_036\_001 | v1.0

procedureMetadata

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

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