Electroretinogram recordings to screen for modifiers of Neuronal Communication defects in fruit flies

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SCOPE OF THE METHOD

The Method relates to	Human health, Other
The Method is situated in	Basic Research
Type of method	In vivo
Used species	Fruit flies
Targeted organ system or type of research	Neuroscience

DESCRIPTION

Method keywords

Neuronal communication
brain

neuronal health
electrical field potentials
eye
genetic screen
electrophysiology
Drosophila melanogaster
mutations

Scientific area keywords

molecular biology
Life science
Biomedicine
cell biology
biomolecular chemistry
neuroscience
biotechnology

Method description

The most commonly used readout for eye function in fruit flies is the electroretinogram (ERG). While ERGs are applied to study phototransduction, they also constitute a robust assay to assess neuronal communication between photoreceptors and second-order brain neurons. Using glass electrodes placed on the eye, the response of the eye and the brain on a light pulse is recorded. The electrical field potential that is recorded during a light flash consists of an ON and OFF transient when the light is turned on and off respectively, and a depolarization of the photoreceptors. In flies expressing for example human mutant Tau, these on and off transient are reduced indicating defects in neuronal communication between the eye and the brain. This ERG readout in Tau mutant flies is used to screen for modifiers that can rescue neuronal communication defects in Tau mutant flies.

Lab equipment

Electroretinogram set up

Method status

Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

Easy to learn, quick method: hundred flies can be easily screened daily.

Future & Other applications

We use the method to study defects in neuronal communication but the assay can also be used in eye research.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

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Associated documents

2018_Book_Clathrin-MediatedEndocytosis.pdf

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