Celeris Pattern Stimulator Application Note



"The New Standard for Rapid and Repeatable Small Mammal testing"

Product Features

High speed PERG and pVEP testing

- Objective measure of Ganglion cell and Optic Nerve function
- Patented Celeris[™] light guide electrodes
- Set up and test in seconds
- Test 20+ animals per hour
- Mice, rats, rabbits, guinea pigs, gerbils

Superior performance and repeatability

- Proven Diagnosys Espion[™] software and controls
- Infinitely adjustable filter settings •
- 32-bit ultra low-noise amplifiers
- Built-in impedance testing
- Custom protocols easily programmed •

Broad range of testing protocols

- Pattern ERG
- Pattern VEP
- Other Patterns (in development)

Applications

- Protocol development and validation
- Gene therapy development & research
- Stem cell research
- Drug discovery and screening
- Pre-clinical trials



Portable



Pattern Stimulator

Celeris system







Rat



Guinea Pig

A. Case example of a Celeris PERG on a **Mouse** control eye and an eye with an optic nerve crush (ONC). An ONC should directly lower the functional output of retinal ganglion cells (RGC) and the PERG specifically measures the functional output of RGC in both its P1 and N2 peaks. As expected the N2 amplitude is highly impacted – reduced by 49%; P1 is reduced by 44% and the implicit times are relatively unchanged. Testing done at the University of Ottawa.

Control Eye

ONC Eye



B. Case example of a Celeris PERG on a **Mouse** control eye and an eye with glaucoma. Glaucoma models should directly lower the P1 and N2 peak responses of the PERG. As expected the P1 and N2 amplitudes are highly impacted – each reduced by about 70%. The implicit times are relatively unchanged. This test also shows the excellent repeatability of Celeris – the Red and Green traces are 2 different tests (pink is the average of the two). Testing done at UCLA Stein Eye Institute.

Glaucoma Eye

Control Eye





C. Case examples using a Dual Pattern Stimulator configuration at a customer. Most laboratories using Celeris have a setup which utilizes 1 pattern stimulator (along with 1 full field stimulator as the fellow eye reference electrode) to conduct PERG and pVEP tests. Celeris does offer the option of 2 pattern stimulators for dual eye Pattern testing. In addition to a second stimulator, a mouse elevator platform enables the rodent to be properly positioned in front of the 2 stimulators as seen in the images below.





The advantages of the configuration include reducing the test time by $\frac{1}{2}$ and being able to check symmetry of PERG responses across both eyes in real-time. Below are tests results demonstrating the precision of Celeris PERG measurements for a wild type normal mouse and a glaucoma model, each tested with a Dual Pattern Stimulator setup.

Dual PERG: Wild Type Mouse

Dual PERG: Glaucoma Model Mouse





D. PERG tests on an LHON model mouse. RE is 6 months post LHON induction. LE is normal and unaffected.



E. Pattern VEP examples of tests conducted on a Celeris. Pattern VEP tests may be run alone or simultaneously with PERG tests on Celeris.



Simultaneous PERG and pVEP measurement



Celeris is covered by one or more of the following US patents and their foreign counterparts: 10,820,824. Additional patents pending.

www.diagnosysllc.com

US: Diagnosys LLC; 55 Technology Drive, Suite 100, Lowell, MA 01851; 978-458-1600; sales@diagnosysllc.com
 EU: Diagnosys Vision Ltd; Office 117, DOC Building, Balheary Road, Swords, Dublin, K67 E5A0, Ireland; +44 (0) 1223 520699; mail@diagnosysvision.com
 UK: Diagnosys UK Ltd; 5 Trust Court, Chivers Way, Vision Park Histon, Cambridge, CB24 9PW, UK; +44 (0) 1223 520699; mail@diagnosysuk.co.uk

The information listed herein is accurate as of the date of printing, however may change at any time without notice. The contents may differ from the current status of approval of the product in your country. Please contact your local Diagnosys representative for more information. © 2021 by Diagnosys, LLC. All rights reserved.
Doc: 15356 Rev: D ECN 1605 Date: 15 Feb 2021