



UTAS BigShot™

VISUAL ELECTRODIAGNOSTIC SYSTEM



FUNCTIONAL TESTING



SMALL - TO - MEDIUM
SIZED ANIMALS



LEGENDARY RELIABILITY



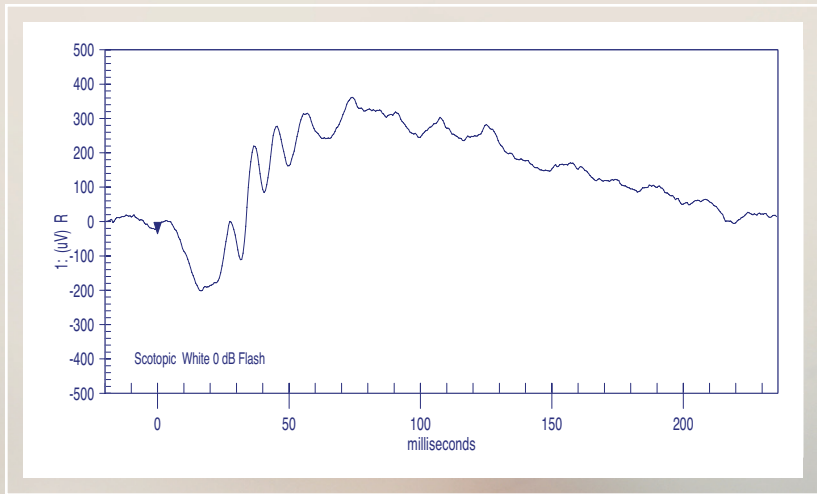
EXPERIENCE THE GOLD STANDARD
IN VISUAL ELECTROPHYSIOLOGY

The UTAS System with BigShot ganzfeld offers everything needed for any flash based electroretinogram (**ERG**) or visual evoked potential (**VEP**) test. With the addition of optional pattern based testing, the UTAS BigShot is suitable for any of your research needs now or in the future.

ULTRA BRIGHT GANZFELD

ULTRA LOW-NOISE DIGITAL AMPLIFIER

ARE YOU GETTING THE FULL PICTURE?



ULTRA LOW NOISE DIGITAL AMPLIFIER

Small, light, and quiet. Fully isolated fiber optic connection over a 2 meter cable. Cleaner signals and response with the following features.

Minimize retesting with:

- Low noise: 4 channel differential with > 10 MΩ impedance
- 24 bit A/D conversion
- Minimal power line interference: CMMR > 110 dB at 50-60 Hz

Visualize only the signal you care about:

- Sampling rate: 500 Hz to 3750 Hz
- Software filters: high cut and low cut filters implemented in application software

GANZFELD – LIGHTEST, BRIGHTEST, MOST CAPABLE

The BigShot is a large format ganzfeld that is suitable for multiple species. Combined with LKC's digital biomedical amplifier, get a faithful reproduction of every nuanced recording.

Features:

- Xenon and LED flashes
- Flash stimuli from -50 dB to +4 dB in any color
- Total flash range from -75 dB (8×10^{-8} cd/s/m²) to +25 dB (790 cd/s/m²) in 1 dB steps
- Background luminance 0.005 to 1000 cd/m² in any color
- Optional UV (265 nm) stimulator for species with UV-sensitive s-cones

MULTI-SPECIES TESTING FOR ALL RESEARCH NEEDS

The UTAS BigShot has the reliability and repeatability critical to your research. The system is capable of multi-species testing, to grow with you as your research progresses.

- Large format ganzfeld, optimal for multiple animal species
- 5 color stimulator (red, blue, green, amber, and UV) to match photoreceptors of multiple species
- Optional UV (265 nm) stimulator for species with UV-sensitive s-cones
- Optional real-time IR camera to aid in monitoring electrode placement
- Optional rodent stage with 2-channel animal manipulator and a DC-powered animal temperature controller
- LKC offers seven sizes of custom rodent electrodes to ensure accurate size fit as well as ERG Jets and DTL electrodes for larger animals

FLEXIBLE AND SECURE SOFTWARE FOR RELIABLE RESULTS

Reliable and customizable animal testing with LKC's flexible software.

Features:

- Custom protocols allow flexibility to create any tests your research demands
- Optional GLP (21CFR11) Compliance Pack to ensure control
- Easily capture, store, and export data
- Control of all amplifier functionality directly through the easy to use software
- Optional pattern based testing

FULL TESTING CAPABILITIES

- | | |
|---|---|
| • Full Field ERG <ul style="list-style-type: none">▪ ISCEV standard stimuli▪ Double flash▪ Photopic Negative Response (PhNR)▪ Scotopic threshold response▪ S-Cone | • Full Field VEP <ul style="list-style-type: none">• Optional Pattern ERG/VEP<ul style="list-style-type: none">▪ On/Off▪ Pattern reversal▪ Steady state and transient responses |
|---|---|

THE UTAS WITH BIGSHOT OFFERS A SEAMLESS, INTEGRATED SYSTEM OPTIMIZED FOR ANIMAL TESTING.

The system features an FDA cleared, large format ganzfeld calibrated to NIST standards, with a 5 color stimulator for multi-species testing. The amplifier has fiber optic technology to provide low noise interference, and the software offers easy storage, extraction, and submission of data. The UTAS with BigShot grows with your research from rodents to rabbits to primates and beyond.

HOW THE UTAS DEVICE DEFINES YOUR VISION RESEARCH

■ TRUSTED GLOBAL BRAND

LKC Technologies shipped the very first commercially available visual electrophysiology system in 1976. Since that time LKC has been known worldwide for delivering systems with world-class performance and legendary reliability. Hundreds of peer reviewed publications and regulatory submissions have been supported by LKC electrophysiology systems in human and animal research as well as clinical use.

■ PROFESSIONAL INSTALLATION AND TRAINING AVAILABLE

Make it easy with LKC's expert staff, available to come to your office or institute to install the system, train staff, and make sure everything is in perfect working order for all testing scenarios.

■ SELECTED RESEARCH

RODENT

Hu Huang, et al. "Age-related macular degeneration phenotypes are associated with increased tumor necrosis-alpha and subretinal immune cells in aged Cxcr5 knockout mice." *PLOS ONE*, March 2017.

Ala Moshiri, et al. "Arap1 Deficiency Causes Photoreceptor Degeneration in Mice." *Investigative Ophthalmology & Visual Science (IOVS)*, March 2017, Vol. 58, 1709-1718.

Tassos Georgiou, et al. "Neuroprotective Effects of Omega-3 Polyunsaturated Fatty Acids in a Rat Model of Anterior Ischemic Optic Neuropathy." *Investigative Ophthalmology & Visual Science (IOVS)*, March 2017, Vol. 58, 1603-1611.

Hongwei Ma, et al. "Inhibition of thyroid hormone receptor locally in the retina is a therapeutic strategy for retinal degeneration." *FASEB*, April 2017.

Da Sun, et al. "Targeted Multifunctional Lipid ECO Plasmid DNA Nanoparticles as Efficient Non-viral Gene Therapy for Leber's Congenital Amaurosis." *Molecular Therapy - Nucleic Acids*, Volume 7, 16 June 2017, Pages 42-52.

PIG

Fernandez de Castro, et al. "Cone Photoreceptors Develop Normally in the Absence of Functional Rod Photoreceptors in a Transgenic Swine Model of Retinitis Pigmentosa." *Investigative Ophthalmology & Visual Science (IOVS)*. April 2014, Vol. 55, 2460-2468.

Patrick A. Scott, et al. "A Pro23His Mutation Alters Prenatal Rod Photoreceptor Morphology in a Transgenic Swine Model of Retinitis Pigmentosa." *Investigative Ophthalmology & Visual Science (IOVS)*, April 2014, Vol.55, 2452-2459.

PRIMATE

Chang-Ning Liu, et al. "Ocular safety assessment of sodium iodate in cynomolgus monkeys, Characterization of a classic retinal toxicant." *Sage Journals, Toxicology Research and Application*, Volume 1. March 2017.

Joseph Bouskila, et al. "Standardized Full-Field Electroretinography in the Green Monkey (*Chlorocebus sabaeus*)." *PLOS ONE*, October 2014.

Junzo Kinoshita, et al. "Digoxin-Induced Reversible Dysfunction of the Cone Photoreceptors in Monkeys." *Investigative Ophthalmology & Visual Science (IOVS)*, February 2014, Vol.55, 881-892.

For more, visit www.lkc.com/research

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LKC Technologies, Inc., established in 1975, is an ISO 13485:2003 & 2016 and MDSAP certified, FDA-registered medical device manufacturer with quality products installed worldwide in over 70 countries.

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