

# ERG2

Powerful advances  
in whole-field  
electrophysiology  
measurements

**phoenix**  
RESEARCH LABS

# Introducing ERG2

Advanced electrophysiology  
focused on your research needs.

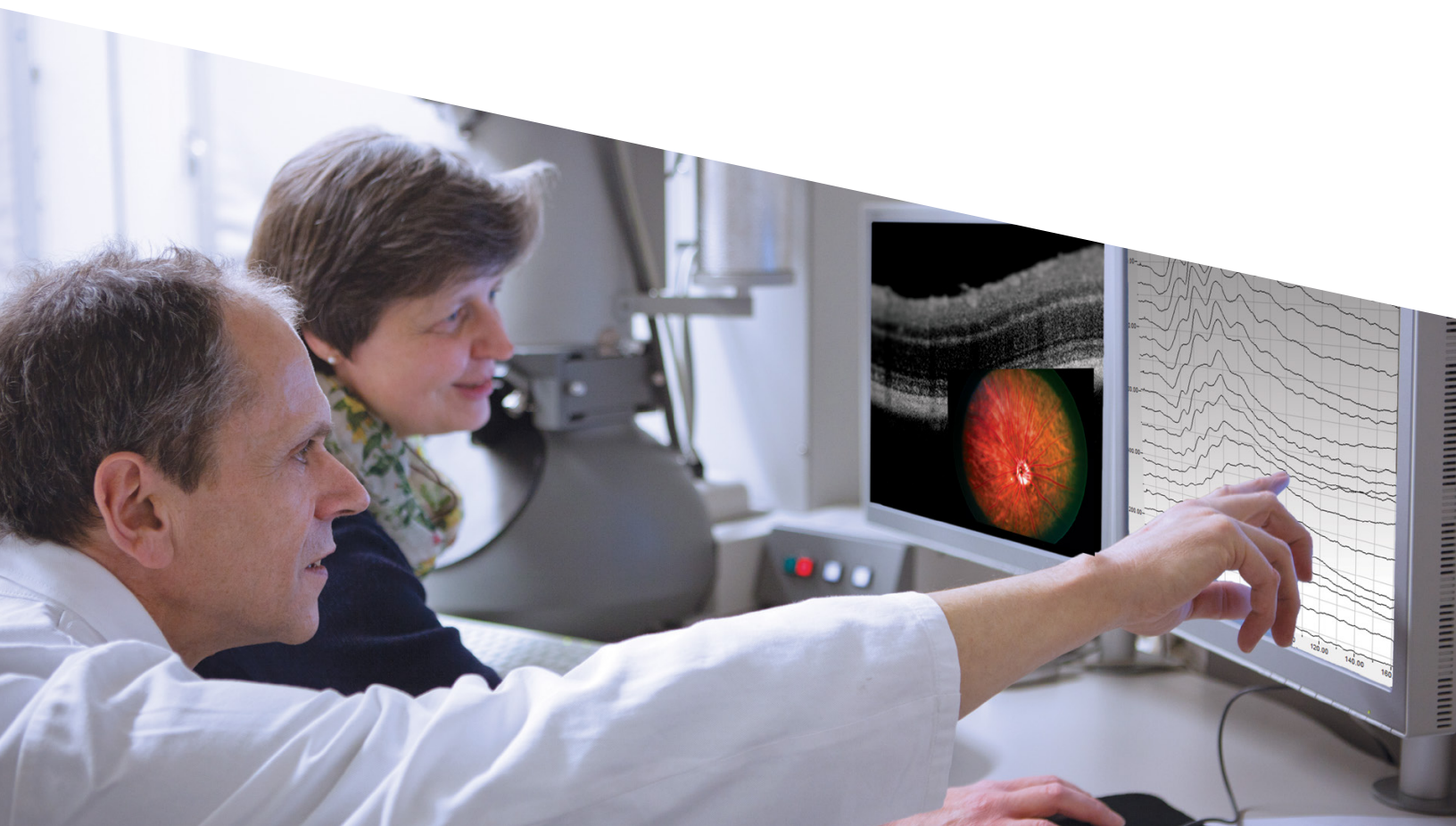
Phoenix Research Labs electrophysiology tools are not adaptations of clinical instruments. Designed specifically for scientific eye research using laboratory animals, Phoenix delivers technology that empowers research and fuels scientific discovery.

## ERG2 Advancements:

**CLEAN** - A new algorithm for artifact free removal of mains pickup

**Extended dynamic range** - ERG now with 27 bits of dynamic range encompassing STR to ERP

**Enhanced processing** - A new level of proficiency in extraction and presentation of OP

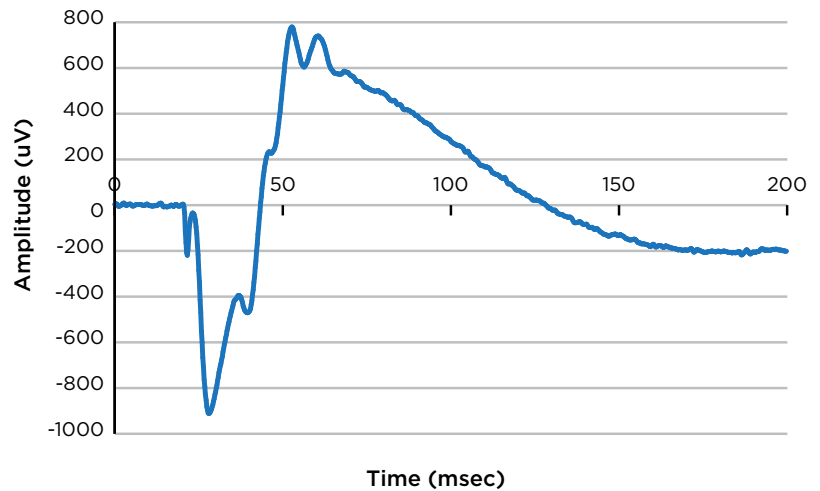


# One technology, two platforms



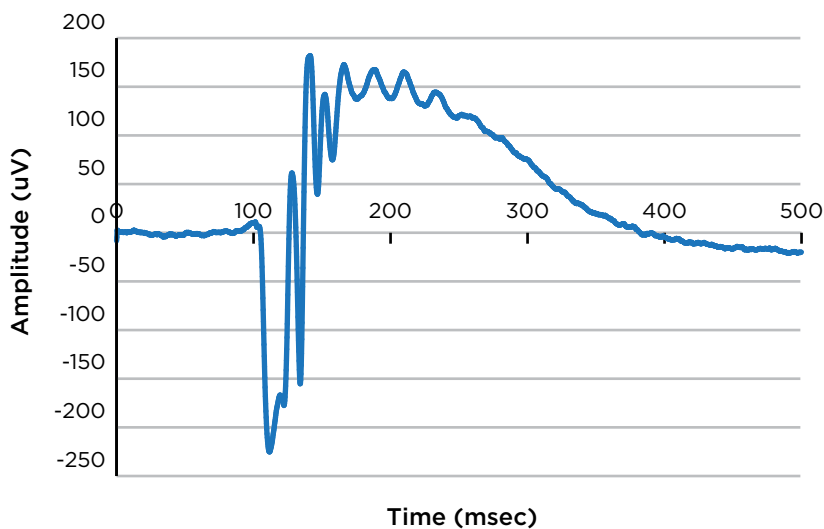
## Ganzfeld ERG for rodents

- Designed for a crowded lab. The smallest system for the smallest animals
- Powerful, validated, versatile
- Built-in electrodes - no more small contact placement in a darkened lab



## Image guided focal ERG for rodents

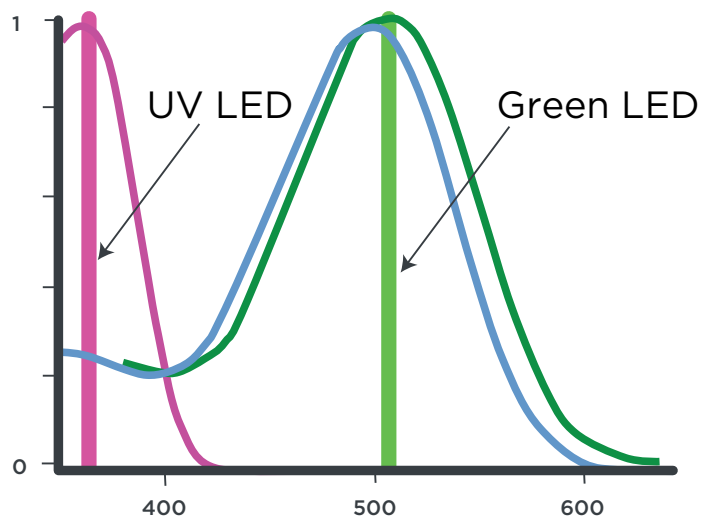
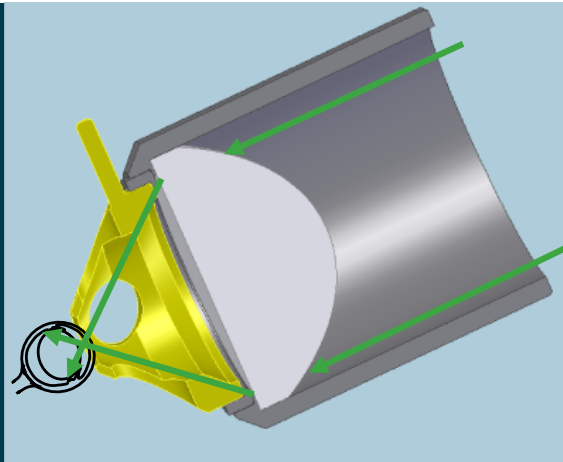
- Attaches to the Micron IV+ camera
- Infrared light guidance keeps animal totally dark adapted
- Built-in electrodes - no more small contact placement in a darkened lab



# The next step in technology for eye research

The unique Maxwellian view design enables placing the corneal electrode on the front lens.

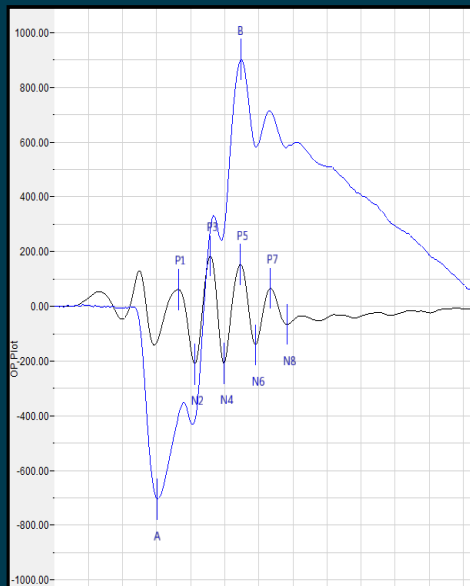
With an infrared camera for guidance, the electrode can be gently contacted to the cornea even in the dark, keeping absolutely dark adaptation and stable contact to the eye.



## Measure responses

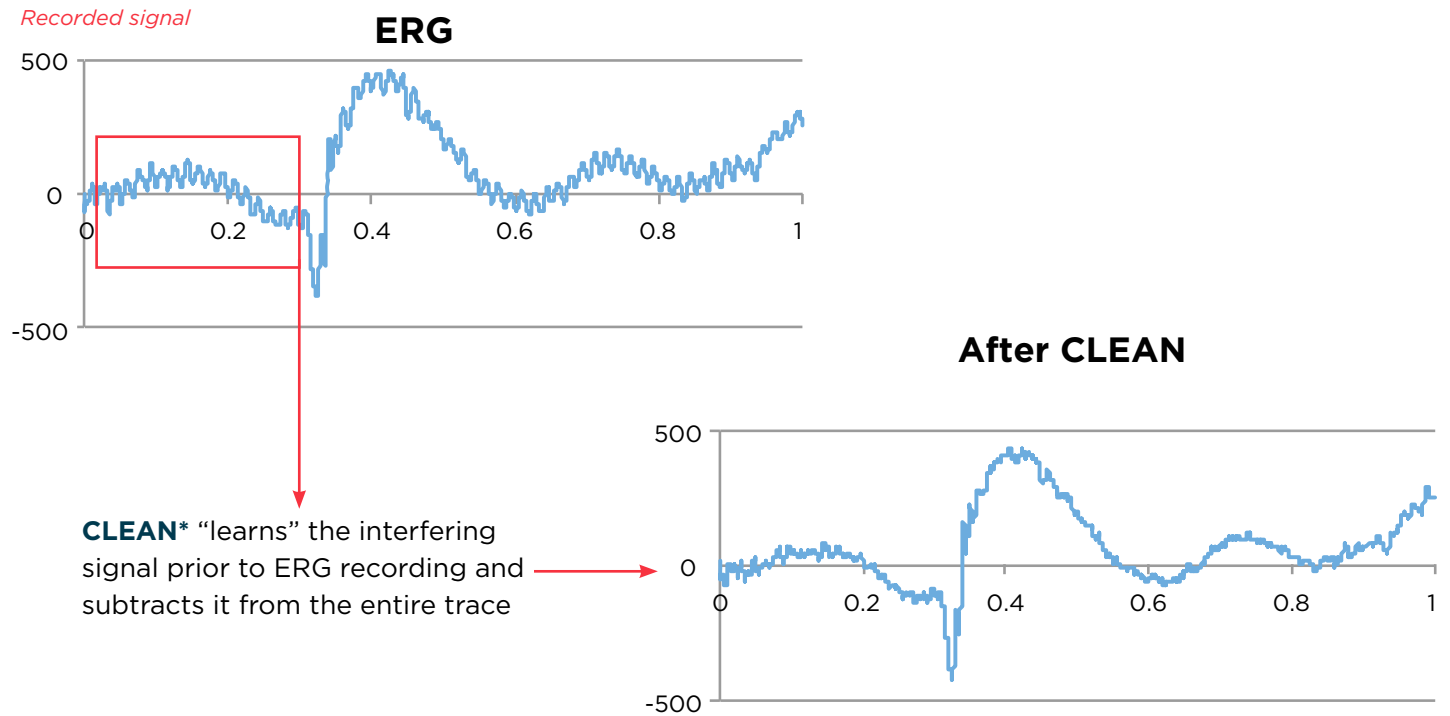
The Phoenix Ganzfeld delivers both green and UV to enable studies of both the S and M cones

Advanced signal processing capability to extract and display OP signals

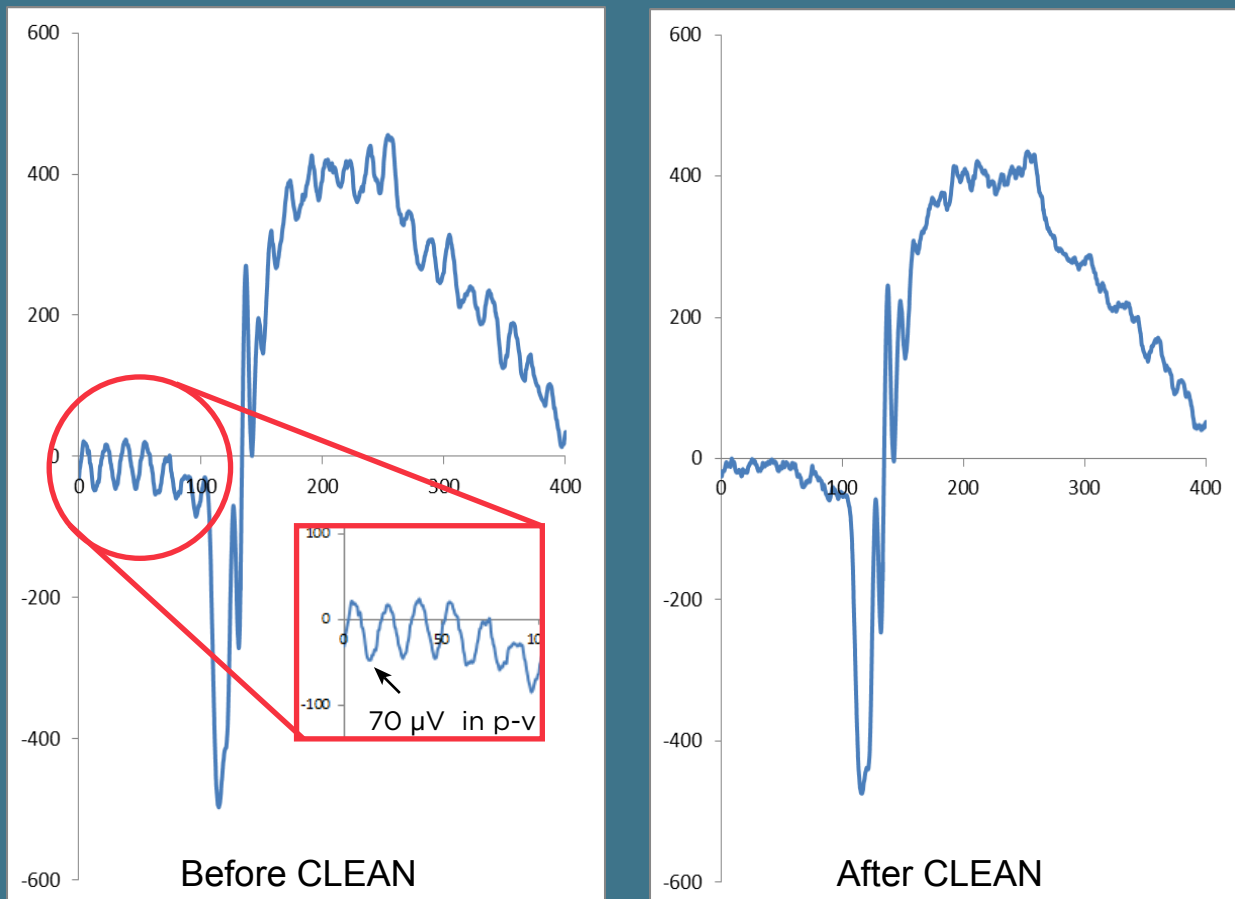


# CLEAN

The first artifact free algorithm automatic for extraction of mains pickup

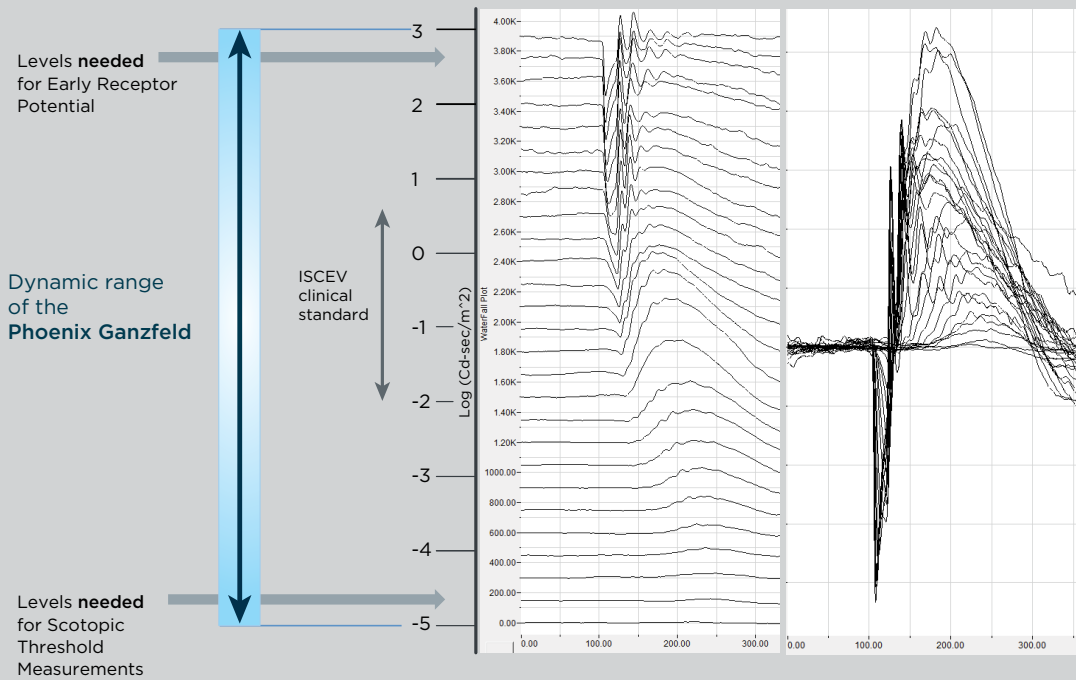


Peak-to-valley noise reduced from 70  $\mu\text{V}$  to 3  $\mu\text{V}$ , a reduction of over 20 dB



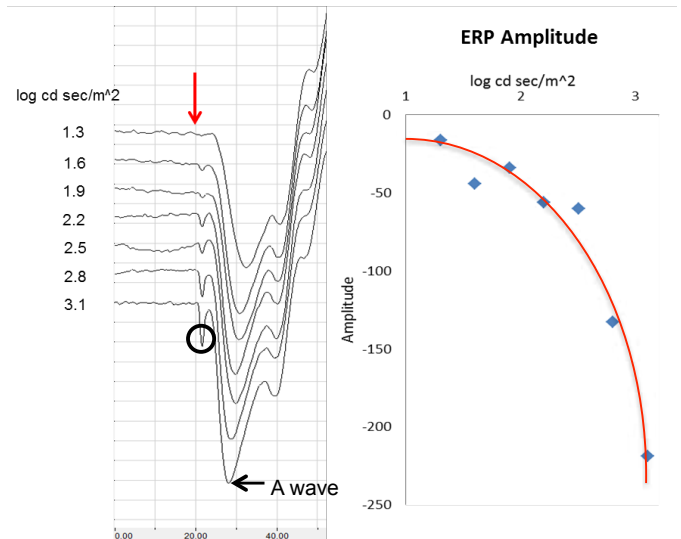
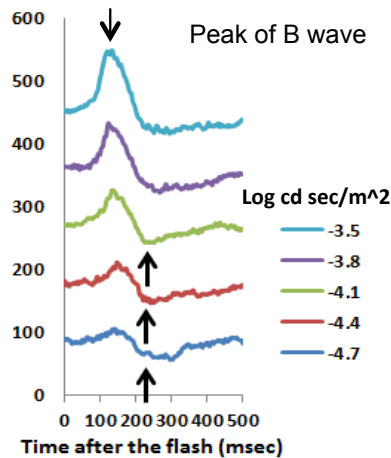
# Ganzfeld

A system for animal eye research with profound flexibility

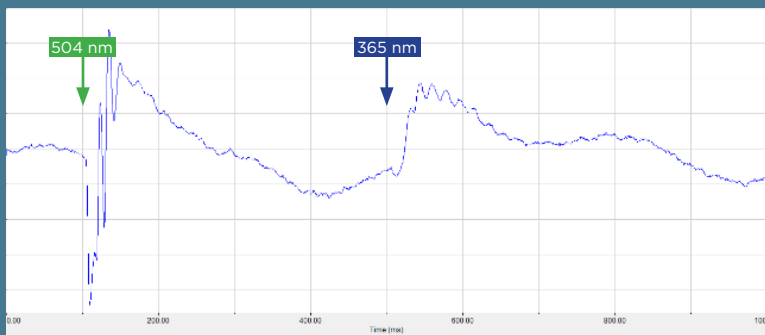


This waterfall display encompasses an enormous dynamic range of  $10^8$

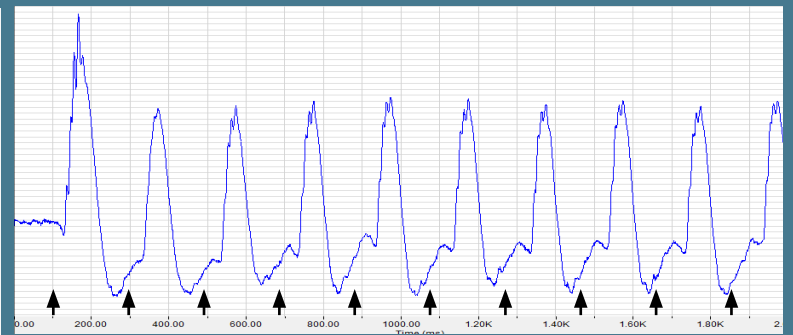
## Scotopic Threshold Response (STR) to Early Receptor Potential (ERP)



A wide variety of signal protocols is available through an intuitive interface



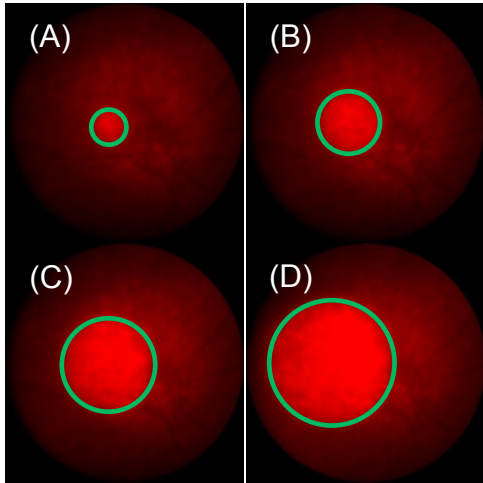
Double pulse, arbitrary wavelength selection



Flicker, arbitrary selection of frequency and background

# Image-Guided Focal ERG

Regional assessment using deep-red light for targeted study



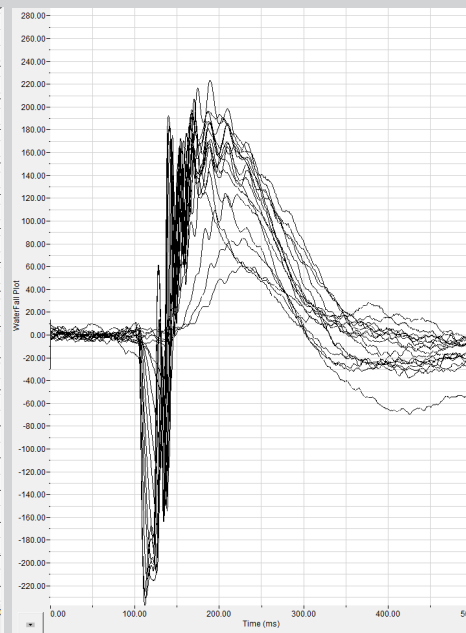
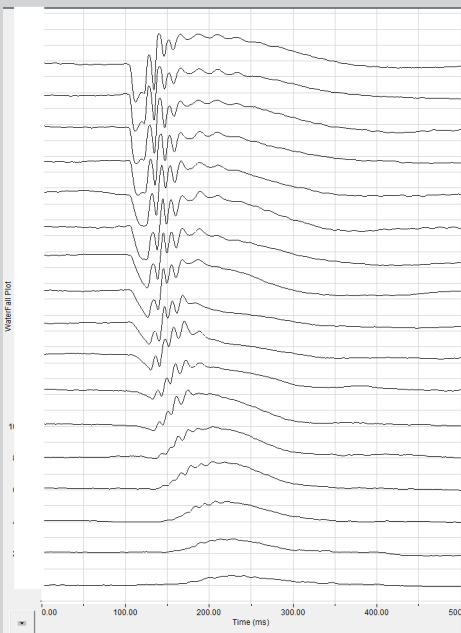
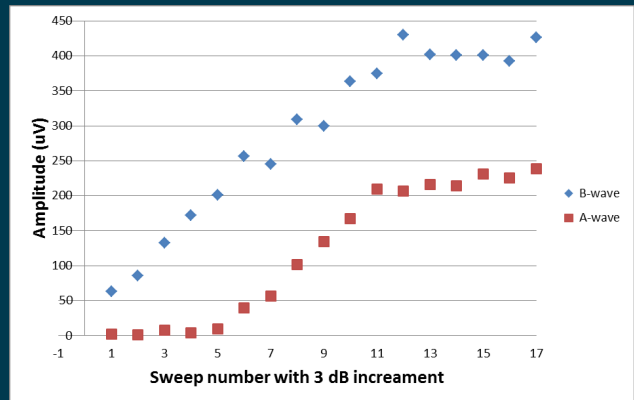
Spot size: (A) 0.25 mm, (B) 0.5 mm, (C) 0.75 mm, and (D) 1.0 mm



Bright Field

Image guiding using 650 nm light keeps dark adaptation

Advanced signal processing capability to extract and display OP signals



Waterfalls with 3dB Increments using 1.5 mm spot diameter on mouse



## Specifications:

	Focal ERG	Ganzfeld ERG
Stimuli	White light LED	365nm & 504nm
Illumination size in diameter	Mouse: 0.25mm, 0.5mm, 0.75mm, 1.0mm, 1.5mm Doubled for rat Micrometer driven targeting	Full field
Range of stimulation in log cd sec/m <sup>2</sup>	-1.7 to 3.1 Set levels over a range of 10 <sup>6</sup>	-4.7 to 3.1 Set levels over a range of 10 <sup>8</sup>
Modes	Single flash Double/Flicker flash Continuous background with flash Light adaptation Chart mode	Single flash Double/Flicker flash Alternate two-color flash Continuous background with flash Light adaptation Chart mode
Pulse length	0.2 millisecond to minutes	
Objective lenses	Separate objective lenses for mouse and rat	Single objective lenses for mouse and rat
Camera	Integrated with Phoenix Micron IV+ (sold separated)	NIR Camera to align pupil
Heater	Set 37 degrees Celsius for Mouse and Rat	Set 37 degrees Celsius for Mouse and Rat
Dark Lab Technology	Illuminate retina for alignment at 680nm Laboratory at 750nm Red screen and red illuminated keyboard	Cornea alignment at 850nm Laboratory at 750nm Red screen and red illuminated keyboard
Software & Controls for Acquisition and Analysis	<p><b>Acquisition:</b>            CLEAN* mode to remove 60/120 pickup noise            Controllable Bandwidth            Controllable digitization sampling rate            Controllable scan and display time            Controllable all parameters of LEDs (Delay, pulse length etc..)</p> <p><b>Analysis:</b>            Automatic measurement of A and B wave peaks            Automatic display of waterfalls            Automatic measurement of OP peaks and implicit time            Averaging with user selection</p>	
Animal stage	5 degrees of freedom	
Electrodes	Corneal contact (gold-plate objective lens) Tail (ground) and head (reference)	

\*Available Summer 2015