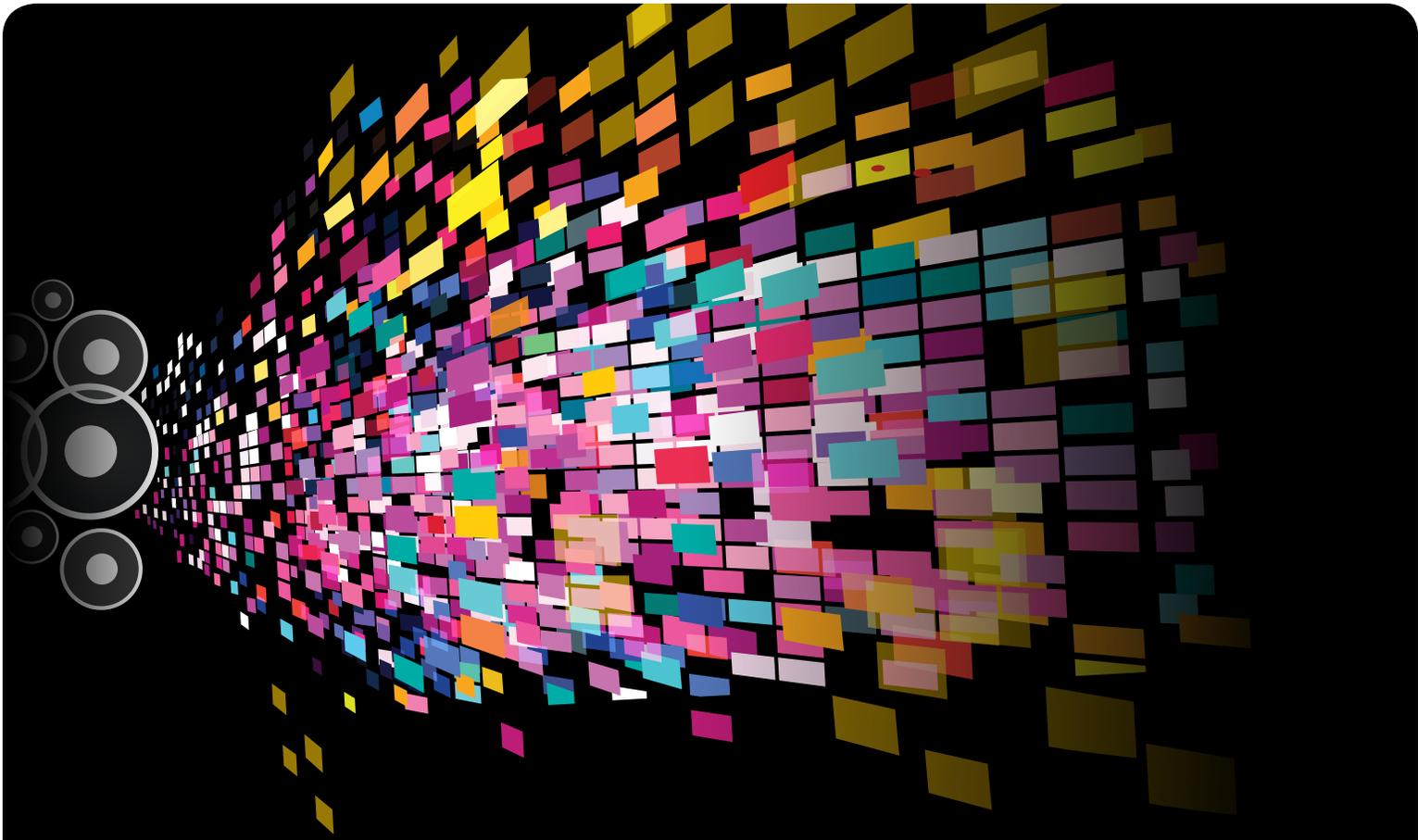


**ZOE™** Fluorescent Cell Imager





# SAY GOOD-BYE TO THE DARKROOM.

---

THE ZOE FLUORESCENT CELL IMAGER WITH INTEGRATED DIGITAL CAMERA AND TOUCH-SCREEN INTERFACE MAKES CELL IMAGING SIMPLE, FAST, AND INTUITIVE. IT IS A COMPLETE IMAGING SYSTEM WITH BRIGHTFIELD AND MULTICHANNEL FLUORESCENCE THAT IS SUITABLE FOR ROUTINE CELL CULTURE AND IMAGING APPLICATIONS.

---

## **Simplified Cell Imaging**

Intuitive touch-screen interface allows users to view cells, capture images, and create multichannel merges.

## **Flexible System**

Brightfield and three fluorescence channels enable use for routine cell culture applications as well as more sophisticated imaging applications.

## **Fluorescence at Your Bench**

Integrated light shield permits fluorescence imaging in ambient light.

## **LED Light Sources**

Fully integrated system with thousands of hours of illumination is instantly ready for intensive use. An automated sleep mode protects the system if it is accidentally left on.

## **Large Sample Area**

Motorized stage and large field of view allow you to see more of your sample, faster.

## **Small Footprint**

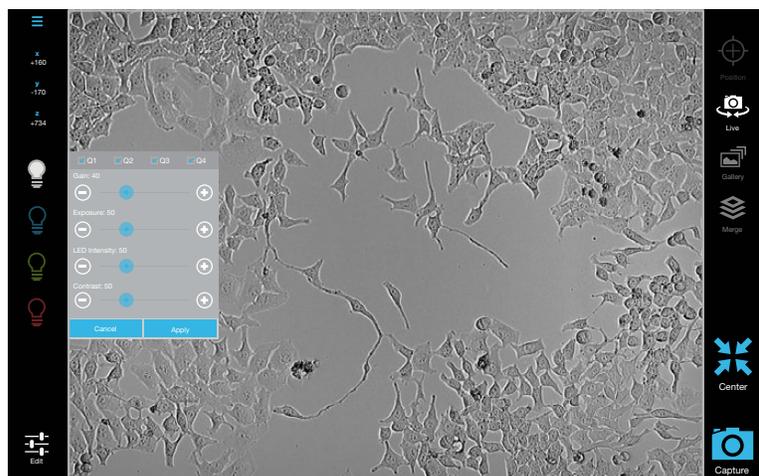
Compact size is designed for crowded laboratory benches.



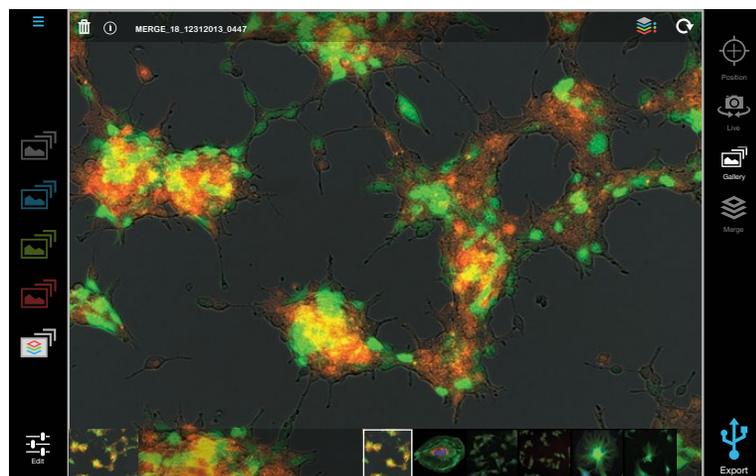
# SAY HELLO TO ZOE.

ZOE Fluorescent Cell Imager

# IMAGE CELLS RIGHT WHERE YOU WORK.



User interface showing Live mode with Edit menu in the brightfield channel.



HEK 293 cells transfected with enhanced green fluorescent protein (EGFP) and red fluorescent protein (RFP).

## Simplified Cell Imaging

The ZOE Cell Imager eliminates the complexities of cell imaging by combining the ease of use of a personal tablet with the power of an inverted microscope. An intuitive touch-screen interface is used to control brightfield, three fluorescence channels, and the integrated digital camera and allows users to view samples, capture and store images, and create multicolor overlays.

Samples are displayed on a high-resolution 25.6 cm (10.1 in.) LCD touch screen, which allows multiple users to look at cell samples together, promoting easy collaboration. For an easier viewing experience, the touch screen has antiglare and antifingerprint treatment.

The z-axis number displayed on the screen assists users in easily bringing the sample into focus. The image quality of the sample in Live mode can be optimized using slider bar controls in the Edit menu, where these four parameters can be adjusted for best imaging quality:

- Gain
- Exposure
- LED Intensity
- Contrast

To achieve a phase-like image contrast, the brightfield channel uses a proprietary method — a ring of green LEDs with user-controlled illumination angle. Use of a green light source reduces chromatic aberrations and enhances contrast compared to white light.

To further improve image contrast, users can change the angle at which the sample is illuminated. Turning off quadrants of the illumination ring results in oblique illumination and phase-like image contrast.

## LED Illumination

LEDs are used as the light source for both brightfield and fluorescence channels. LEDs do not require any warm-up and the cool and even light emitted by the LEDs is user adjustable, thus reducing sample photobleaching. Unlike the commonly used mercury arc lamp that needs to be replaced approximately every 300 hours, LEDs provide thousands of hours of illumination, lowering the cost of owning and operating a microscope.

## Multichannel Fluorescence at Your Bench

Three fluorescence channels (blue, green, and red) are fully integrated and optimized for the most commonly used fluorescent proteins and dyes, providing flexibility in the design of multicolor imaging experiments.

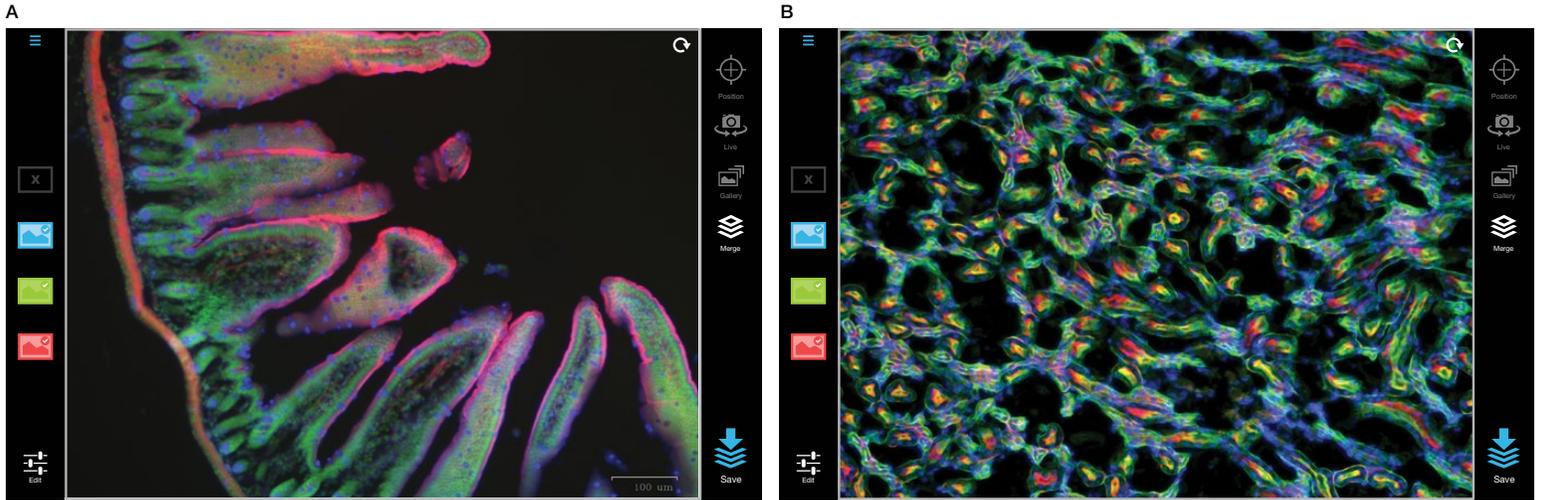
The integrated light shield blocks ambient light, allowing fluorescence imaging right on a benchtop, without the need for a darkroom.

## Excitation and emission spectra for the fluorescence channels.

Channel	Excitation, nm	Emission, nm
Blue	355/40	433/36
Green	480/17	517/23
Red	556/20	615/61

## Robust System

As a fully integrated system with long-life LEDs, the ZOE Cell Imager is a robust imaging device ready for intensive daily use. There are no time-consuming setup and hardware adjustments to perform (optical and illumination alignment) or parts with a limited life span (mercury arc lamps). The ZOE Cell Imager uses high-quality hard-coated filter sets that provide high light transmission and long life.



**User interface.** **A**, mucus of goblet cells stained with Alexa Fluor 350 Wheat Germ Agglutinin (blue fluorescent lectin), filamentous actin stained with red-orange fluorescent Alexa Fluor 568 Phalloidin, and nuclei stained with SYTOX Green Nucleic Acid Stain in a section of mouse intestine; **B**, elements of the glomeruli and convoluted tubules stained with Alexa Fluor 488 Wheat Germ Agglutinin (green fluorescent lectin), filamentous actin in the glomeruli and the brush border stained with red-orange fluorescent Alexa Fluor 568 Phalloidin, and nuclei stained with 4',6-diamidino-2-phenylindole dihydrochloride (DAPI; blue fluorescent DNA stain) in a mouse kidney section.



**Touch screen and integrated light shield.** The sensitive touch screen is compatible with gloved hands.

### See More of Your Sample

With the ZOE Cell Imager's large field of view and motorized stage (up to 6 mm of travel), a large sample area can be visualized rapidly, which is desirable when assessing transfection efficiency or cell confluency. Direction and speed of the stage movements are controlled through the touch screen.

Its 20x achromat objective is mounted in a proprietary manner, resulting in a wide field of view (0.70 mm<sup>2</sup>) that is ~180% greater than that of a traditionally mounted 20x objective lens. This mounting technique provides users much greater flexibility with the field of view. When zoomed out it is approximately equivalent to that of a 4x objective. When needed, use the pinch-to-zoom gesture to magnify up to 20x by digital zoom while retaining resolution (1 µm).

### Easy Image Capture

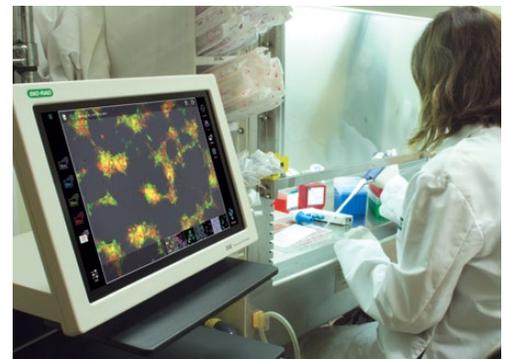
With the integrated digital 5MP CMOS camera, it takes only one tap on the touch screen to take an image. Up to 2,500 JPEG image files can be stored in the 16 GB internal memory. Using the embedded software, captured images can be edited (adjustments to contrast and brightness) and overlaid directly into multicolor image merges. Two USB ports allow easy image export in JPEG, TIFF, or RAW file formats that are compatible with commonly used image software packages.

**The ZOE Cell Imager is a compact, stand-alone instrument that does not require a computer for operation.** With its small footprint, it fits in any laboratory setting, even those with limited benchspace.

### Applications

With brightfield and three fluorescence channels, the ZOE Cell Imager has all the features needed for daily cell culture work as well as for fluorescence applications.

- Estimate cell confluency
- Observe general cell health and morphology
- Monitor cell growth and proliferation
- Capture brightfield or fluorescence images of cells
- Visualize expression of fluorescent proteins
- View immunofluorescent localization of proteins
- Estimate transfection efficiency



## Specifications

Imaging channels	Brightfield and three fluorescence channels*
Illumination light sources	Ultraviolet LED for blue channel Blue LED for green channel Green LED for red channel Ring of green LEDs for brightfield channel (reduces chromatic aberration)
Blue channel	Excitation: 355/40 nm; emission: 433/36 nm
Green channel	Excitation: 480/17 nm; emission: 517/23 nm
Red channel	Excitation: 556/20 nm; emission: 615/61 nm
Touch screen	25.6 cm (10.1 in.) color LCD monitor, touch screen with antiglare and antifingerprint treatment, 1,280 x 768 pixels image resolution, 80–180° angle tilt range
Focusing mechanism	Coarse and fine, manual adjustment
Camera	Monochrome camera, 12 bit CMOS, 5 megapixels
Image file types	JPEG, TIFF, RAW
Image merge	Images from up to 4 channels can be overlaid
Data storage	16 GB internal memory (~2,500 JPEG files, 1,500 TIFF files, 400–800 RAW files)
Data export	Yes, 2 USB ports
Objective	20x
Numerical aperture	0.40
Field of view	0.70 mm <sup>2</sup>
Display magnification	175x
Digital zoom magnification	700x
Motorized stage	6 mm travel in X, Y direction; touch-screen control of travel speed and direction
Compatible consumables	Flasks (T25, T75, T225); multiwell plates (6, 12, 24, 48, 96, and 384 wells); dishes (35, 60, and 100 mm); chamber slide; glass microscopy slide
Onboard software	Yes
Stand-alone system	Yes, Android operating system; PC is not required for operation
Instrument dimensions (W x D x H)	33 x 32 x 30 cm (13 x 12.6 x 11.8 in.)
Instrument weight	9 kg (19.8 lb)

\* High-quality hard-coated filter sets provide high light transmission and long life.

## Ordering Information

Catalog #	Description
<b>ZOE Fluorescent Cell Imager</b>	
145-0031	<b>ZOE Fluorescent Cell Imager</b> , 120–240 V, includes instrument, power supply, USB flash drive
<b>Kits and Reagents</b>	
<b>Nuclear Staining Dyes</b>	
135-1303	<b>PureBlu™ DAPI Nuclear Staining Dye</b> , pkg of 1, includes 5 x 50 µg vials of DAPI powder
135-1304	<b>PureBlu Hoechst 33342 Nuclear Staining Dye</b> , pkg of 1, includes 5 x 56 µg vials of Hoechst 33342 powder
<b>Antibody Labeling Kits</b>	
135-1001	<b>ReadiLink 350/440 Antibody Labeling Kit</b> , pkg of 1, kit includes dye, reaction buffer, and quench buffer for labeling 2 x 50 µg of antibodies
135-1002	<b>ReadiLink 492/516 Antibody Labeling Kit</b>
135-1003	<b>ReadiLink 555/570 Antibody Labeling Kit</b>
135-1004	<b>ReadiLink 594/610 Antibody Labeling Kit</b>
<b>Fixable Viability Dyes</b>	
135-1111	<b>VivaFix™ 353/442 Cell Viability Assay</b> , pkg of 1, kit includes 4 x 50 assay vials and 250 µl of DMSO, for running 200 assays
135-1115	<b>VivaFix 498/521 Cell Viability Assay</b>
135-1116	<b>VivaFix 547/573 Cell Viability Assay</b>
135-1117	<b>VivaFix 583/603 Cell Viability Assay</b>
<b>Cell Proliferation Assay</b>	
135-1201	<b>CFDA-SE</b> , pkg of 1, 5 x 100 µg vials

Visit [bio-rad.com/web/ZOEmore](http://bio-rad.com/web/ZOEmore) for more information.

Alexa Fluor and SYTOX are trademarks of Life Technologies Corporation. Android is a trademark of Google Inc. ReadLink is a trademark of AAT Bioquest, Inc.



**BIO-RAD**

**Bio-Rad  
Laboratories, Inc.**

Life Science  
Group

**Web site** [www.bio-rad.com](http://www.bio-rad.com) **USA** 800 424 6723 **Australia** 61 2 9914 2800 **Austria** 01 877 89 01 **Belgium** 09 385 55 11 **Brazil** 55 11 3065 7550  
**Canada** 905 364 3435 **China** 86 21 6169 8500 **Czech Republic** 420 241 430 532 **Denmark** 44 52 10 00 **Finland** 09 804 22 00  
**France** 01 47 95 69 65 **Germany** 089 31 884 0 **Greece** 30 210 9532 220 **Hong Kong** 852 2789 3300 **Hungary** 36 1 459 6100 **India** 91 124 4029300  
**Israel** 03 963 6050 **Italy** 39 02 216091 **Japan** 81 3 6361 7000 **Korea** 82 2 3473 4460 **Mexico** 52 555 488 7670 **The Netherlands** 0318 540666  
**New Zealand** 64 9 415 2280 **Norway** 23 38 41 30 **Poland** 48 22 331 99 99 **Portugal** 351 21 472 7700 **Russia** 7 495 721 14 04  
**Singapore** 65 6415 3188 **South Africa** 27 861 246 723 **Spain** 34 91 590 5200 **Sweden** 08 555 12700 **Switzerland** 026 674 55 05  
**Taiwan** 886 2 2578 7189 **Thailand** 1800 88 22 88 **United Kingdom** 020 8328 2000