

Fluorescence goes  
to great wavelengths to reach  
the applications you need.



The new VersaFluor™ fluorometer for nucleic acid and protein quantitation, reporter gene assays and caspase/apoptosis measurements, just to name a few.

**BIO-RAD**



# the new VersaFluor multiple-wavelength fluorometer

The VersaFluor is the most flexible and affordable benchtop fluorometer, featuring user-selectable filters for precise excitation and emission wavelengths. VersaFluor can excite and detect a broad spectrum of fluorescent dyes anywhere in the range of 350–900 nm. Easy-to-use, menu-driven software allows you to manually read single samples or automatically record kinetic assays. Range and gain settings are adjustable to maximize sensitivity. VersaFluor can accept disposable or glass standard cuvettes and microcuvettes. Data can be exported through the RS-232 serial port to the optional thermal printer.

## Filter Selection Guide

VersaFluor accepts a wide range of optical filters for the many different fluorescent assays now available. When purchasing your VersaFluor, simply select the appropriate excitation and emission filters for your particular assays. The filter selection table below lists several widely-used fluorescent assays and the optical filters required.

## High Sensitivity and Selectivity

The VersaFluor fluorometer allows accurate quantitation of DNA at concentrations as low as 10 ng/ml using Hoechst dye, in a standard 2 ml assay volume. Hoechst dye preferentially binds dsDNA, providing high selectivity in the presence of RNA or proteins.

## Multiple Filters

User-selectable filters support a multitude of applications with a broad range of excitation and emission wavelengths.

## Disposable Cuvettes

Eliminate sample-to-sample cross-contamination by using our standard cuvette (1 ml–3.5 ml) or the unique small volume microcuvette (150–300 µl).

## The Complete Solution

- Rapid and accurate quantitation of DNA, RNA, oligonucleotides and proteins
- Reporter gene assays ( $\beta$ -galactosidase and  $\beta$ -glucuronidase, Green Fluorescent Protein assay)
- Cell death studies (apoptosis)

<i>Application</i>	<i>Excitation Filter</i>	<i>Cat. No.</i>	<i>Emission Filter</i>	<i>Cat. No.</i>
<b>DNA Quant.</b> (H33258)	EX360/40 (340–380 nm)	170-2420	EM460/10 (455–465 nm)	170-2421
<b><math>\beta</math>-Galactosidase</b> (MUG)	EX360/40 (340–380 nm)	170-2420	EM460/10 (455–465 nm)	170-2421
<b><math>\beta</math>-Glucuronidase</b> (MUGluc)	EX360/40 (340–380 nm)	170-2420	EM460/10 (455–465 nm)	170-2421
<b>Caspase/Apopain</b> (Z-DEVD-AFC)	EX390/22 (379–401 nm)	170-2443	EM510/10 (505–515 nm)	170-2445
<b>DNA Quant.</b> (PicoGreen®)	EX480/20 (470–490 nm)	170-2427	EM520/10 (515–525 nm)	170-2424
<b>RNA Quant.</b> (RiboGreen™)	EX490/10 (485–495 nm)	170-2422	EM520/10 (515–525 nm)	170-2424
<b>Oligo Quant.</b> (OliGreen™)	EX480/20 (470–490 nm)	170-2427	EM520/10 (515–525 nm)	170-2424
<b>Prot. Quant.</b> (NanoOrange™)	EX480/20 (470–490 nm)	170-2427	EM590/10 (585–595 nm)	170-2425
<b>Fluorescein</b>	EX490/10 (485–495 nm)	170-2422	EM520/10 (515–525 nm)	170-2424
<b>Ethidium Bromide</b>	EX510/10 (505–515 nm)	170-2423	EM620/10 (615–625 nm)	170-2426
<b>wtGFP</b> (wild GFP)	EX390/22 (379–401 nm)	170-2443	EM510/10 (505–515 nm)	170-2445
<b>EGFP</b> (red-shifted GFP)	EX490/10 (485–495 nm)	170-2422	EM510/10 (505–515 nm)	170-2445
<b>EBFP</b> (blue emitting GFP)	EX380/30 (365–395 nm)	170-2444	EM440/10 (435–445 nm)	170-2446
<b>GFPuv</b> (UV excited GFP)	EX390/22 (379–401 nm)	170-2443	EM510/10 (505–515 nm)	170-2445

# Fluorescent assay kits

## Caspase-3/Apoptosis Assay

Caspase-3, derived from the proenzyme CPP32, is activated at a critical juncture in the process of programmed cell death and is a definitive marker of cells that will die by apoptosis. Now you can easily detect and quantify caspase-3 activity using the FluorAce™ apopain assay kit. The FluorAce assay is sensitive, fast, quantitative and easy to use.

The FluorAce™ apopain assay kit utilizes the fluorogenic peptide-dye substrate carbobenzoxy-Asp-Glu-Val-Asp-7-amino-4-trifluoromethyl coumarin (Z-DEVD-AFC) which fluoresces in the range of 420–460 nm. Free AFC fluoresces in the range of 500–550 nm. As caspase-3 cleaves the fluorescent dye (AFC) from the substrate, the 420–460 nm fluorescence decreases and the 500–550 nm fluorescence increases. Caspase-3 activity can be quantified by measuring the increased fluorescence in the range of 500–550 nm. The fluorescence is stimulated by illuminating the reaction mixture in the range of 360–390 nm.

## FluorAce Apopain/Caspase-3 Assay



The FluorAce apopain assay kit contains caspase-3 substrate (Z-DEVD-AFC), caspase-3 inhibitor (Ac-DEVD-CMK), enzyme control (caspase-3/apopain), standardized AFC and reaction buffer. The standardized AFC is used to generate a calibration curve, *i.e.*, convert fluorescence units to nM (nano molar) AFC. The inhibitor is used as a control for specific activity. The enzyme control is provided to run a

convenient model assay and ensure the detection system is performing appropriately; the enzyme activity is specified on the bottle label. The assay is performed using a fluorometer and contains sufficient reagents for 100 standard 1 ml assays.



## DNA Quantitation Assay

The Fluorescent DNA Quantitation Kit quickly and accurately quantitates dsDNA in solution. Hoechst 33258 dye precisely quantitates because it preferentially binds dsDNA even in the presence of RNA and proteins. After Hoechst dye binds dsDNA and is excited with 360 nm light, the dye emits a blue light that's easily detected using a fluorometer.

The kit quantitates dsDNA in the range of 10 ng/ml–5 µg/ml and contains reagents for 750 standard 2 ml reactions.

## β-Galactosidase Reporter Assay

β-galactosidase activity is now more accurately detected with the FluorAce β-galactosidase reporter assay kit. The fluorescent substrate (MUG) is added to the cellular extract and is cleaved by β-galactosidase, producing a fluorescent compound (4MU) which is easily detected using a fluorometer. The kit contains reagents for 200 standard 1.5 ml reactions.

## β-Glucuronidase Reporter Assay

Detect β-glucuronidase activity quickly and precisely with the FluorAce β-glucuronidase reporter assay kit. Substrate (MUGluc) is cleaved in the presence of β-glucuronidase, producing a fluorescent compound which is easily detected using a fluorometer. The kit contains reagents for 200 standard 1.5 ml reactions.

## VersaFluor Specifications

<b>Light Source:</b>	20 W quartz halogen lamp, 350–900 nm
<b>Lamp Life:</b>	2,000 hours
<b>Sensing Device:</b>	Photodiode
<b>Optical Filter Size:</b>	Excitation: 1" diameter with holder Emission: 1" diameter with holder
<b>Cuvette Sizes:</b>	Standard: 12.5 x 12.5 mm (outside dimension) Microcuvettes: 3.0 x 3.0 mm (outside dimension)
<b>Sensitivity:</b>	10 ng/ml DNA using Hoechst dye in a 2 ml assay volume
<b>Sensitivity Selection:</b>	Three settings: LOW, MED and HIGH with approximate factor of 10 between each setting
<b>Dynamic Range:</b>	5 orders using all three sensitivity selections
<b>Regulatory:</b>	EN61010-1, CE
<b>Printer Output:</b>	RS-232 serial port
<b>Printer:</b>	VersaFluor thermal printer
<b>AC Power Input:</b>	100–240 VAC, 50–60 Hz
<b>Weight:</b>	4 kg
<b>Dimensions:</b>	17 x 33 x 23 cm (H x W x D)

*PicoGreen, OliGreen, NanoOrange and RiboGreen are trademarks of Molecular Probes, Inc.*

## Ordering Information

<i>Cat. No.</i>	<i>Product Description</i>
170-2402	<b>VersaFluor Fluorometer 100/120/220 V</b> , includes a standard cuvette holder, 100 standard disposable cuvettes and a choice of one excitation and one emission filter
170-2403	<b>VersaFluor Fluorometer 120 V System</b> , includes everything listed in 170-2402 plus a 120 V thermal printer and cable
170-2404	<b>VersaFluor Fluorometer 100 V System</b> , includes everything listed in 170-2402 plus a 100 V thermal printer and cable

### *VersaFluor Optical Filter Sets*

170-2435	<b>Filter Set (EX360, EM460)</b> , for DNA quantitation (Hoechst), $\beta$ -galactosidase (MUG) and $\beta$ -glucuronidase (MUGluc)
170-2436	<b>Filter Set (EX490, EM520)</b> , for pH (BCECF) and calcium (Fluo-3) indicator
170-2447	<b>Filter Set (EX390, EM510)</b> for caspase/apoptosis (AFC)

### *Individual Excitation Filters*

170-2420	<b>EX360/40 (340–380 nm)</b>
170-2427	<b>EX480/20 (470–490 nm)</b>
170-2422	<b>EX490/10 (485–495 nm)</b>
170-2423	<b>EX510/10 (505–515 nm)</b>
170-2443	<b>EX390/22 (379–401 nm)</b>
170-2444	<b>EX380/30 (365–395 nm)</b>

### *Individual Emission Filters*

170-2421	<b>EM460/10 (455–465 nm)</b>
170-2424	<b>EM520/10 (515–525 nm)</b>
170-2425	<b>EM590/10 (585–595 nm)</b>
170-2426	<b>EM620/10 (615–625 nm)</b>
170-2445	<b>EM510/10 (505–515 nm)</b>
170-2446	<b>EM440/10 (435–445 nm)</b>

### *Printers*

170-2409	<b>VersaFluor Thermal Printer, 100 V</b> , with cable
170-2410	<b>VersaFluor Thermal Printer, 120 V</b> , with cable
170-2411	<b>VersaFluor Thermal Printer, 220 V</b> , with cable
170-2412	<b>Thermal Printer Paper</b>
170-2413	<b>Thermal Printer Universal Battery Pack</b>

### *VersaFluor Accessories*

170-2415	<b>Standard Cuvettes</b> , 12.5 x 12.5 mm (outside dimension), 4-sided optically clear, polystyrene, 3.5 ml, 100
170-2416	<b>Microcuvettes</b> , 3.0 x 3.0 mm (outside dimension), 4-sided optically clear, polystyrene, 150–300 $\mu$ l, 100
170-2406	<b>Standard Cuvette Holder</b>
170-2407	<b>Microcuvette Adaptor</b>
170-2430	<b>Quartz Halogen Replacement Lamp</b>
170-2450	<b>Optical Filter Storage Case</b>

### *VersaFluor Assay Kits*

170-3130	<b>FluorAce Apopain Assay Kit</b>
170-2480	<b>Fluorescent DNA Quantitation Kit</b>
170-3150	<b>FluorAce <math>\beta</math>-Galactosidase Reporter Assay Kit</b>
170-3151	<b>FluorAce <math>\beta</math>-Glucuronidase Reporter Assay Kit</b>

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