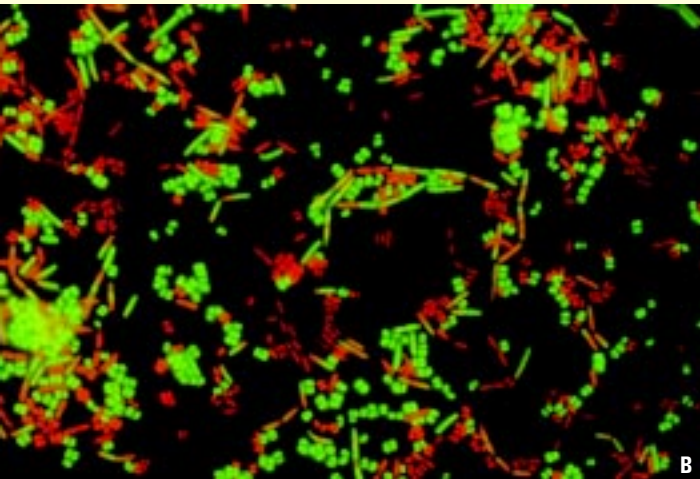
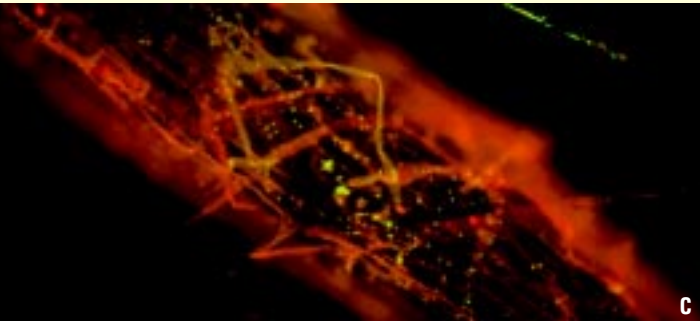


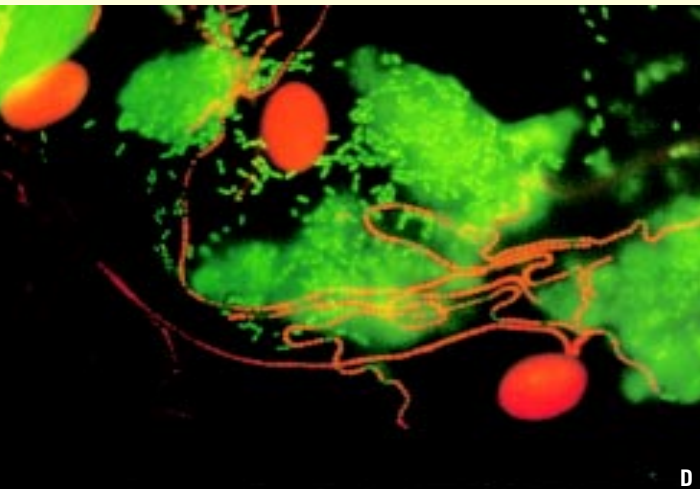
A



B



C



D

# LIVE/DEAD<sup>®</sup>

## *BacLight*<sup>™</sup> BACTERIAL VIABILITY KITS

Molecular Probes' sensitive, single-step, fluorescence-based assays for distinguishing live and dead bacteria

**SIMPLE AND RAPID** The *BacLight* assays for bacterial cell viability can be completed in 15 minutes and do not require wash steps.

**SPECIFIC AND RELIABLE** Live cells fluoresce green; dead cells fluoresce red.

**VERSATILE** Distinguish live and dead bacteria in mixed populations.

**INSTRUMENT COMPATIBLE** The LIVE/DEAD *BacLight* Kits can be used with a fluorescence microscope, fluorescence microplate reader, flow cytometer or fluorometer.

**EASILY QUANTITATED** Live and dead bacteria can be viewed separately or simultaneously by fluorescence microscopy. Fluorometry assays can discriminate as few as 1% to 10% live or dead cells in a mixed population.

**MULTIPLE APPLICATIONS** Bacterial viability can be measured in response to physical and chemical agents for applications in biology, medicine, biotechnology, environmental science and food and water analysis.



The **LIVE/DEAD® BacLight™ Bacterial Viability Kits** provide sensitive, single-step, fluorescence-based assays for bacterial cell viability.<sup>1-4</sup> The *BacLight* assays can be completed in minutes, do not require wash steps and can be applied to bacterial suspensions or bacteria trapped on filters. The *BacLight* kits are well suited for use with a fluorescence microscope or for use in quantitative assays employing a fluorescence microplate reader, flow cytometer or fluorometer.

The **LIVE/DEAD BacLight Bacterial Viability Kits** employ two nucleic acid stains — the green-fluorescent **SYTO® 9** stain and the red-fluorescent propidium iodide stain. These stains differ in their ability to penetrate healthy bacterial cells. When used alone, SYTO 9 stain labels both live and dead bacteria. In contrast, propidium iodide penetrates only bacteria with damaged membranes, reducing SYTO 9 fluorescence when both dyes are present. Thus, live bacteria with intact membranes fluoresce green, while dead bacteria with damaged membranes fluoresce red (Figure 1). Live and dead bacteria can be viewed separately or simultaneously by fluorescence microscopy with suitable optical filter sets. Mounting oil is supplied for viewing bacteria on filter membranes.

The **LIVE/DEAD BacLight Bacterial Viability Kits** are available in three forms. **Kit L-7007** contains the SYTO 9 and propidium iodide nucleic acid dyes mixed at two different proportions in solution, whereas **Kit L-7012** contains separate vials of the two component dyes in solution. For added convenience, **Kit L-13152** contains the same two nucleic acid dyes, but dried and premeasured into separate polyethylene transfer pipet pairs. In addition, Kit L-13152 does not require organic solvents or refrigerated storage.

The *BacLight* assay has been tested on many eubacterial species, including:

- *Bacillus cereus*
- *Enterobacter aerogenes*
- *Escherichia coli*
- *Klebsiella pneumoniae*
- *Micrococcus luteus*
- *Mycobacterium marinum*
- *Mycobacterium phlei*
- *Pseudomonas aeruginosa*
- *Salmonella typhimurium*
- *Staphylococcus aureus*
- *Streptococcus pyogenes*
- *Vibrio parahaemolyticus*

## References

1. Biotechnol Intl 1, 291 (1997);
2. Infec Immun 65, 1497 (1997);
3. Intl J Parasitol 26, 637 (1996);
4. FEMS Microbiol Lett 133, 1 (1995).

## Ordering Information

- L-7007** LIVE/DEAD® *BacLight*™ Bacterial Viability Kit \*for microscopy\* \*1000 assays\*
- L-7012** LIVE/DEAD® *BacLight*™ Bacterial Viability Kit \*for microscopy and quantitative assays\* \*1000 assays\*
- L-13152** LIVE/DEAD® *BacLight*™ Bacterial Viability Kit \*10 applicator sets\* \*500 assays\*

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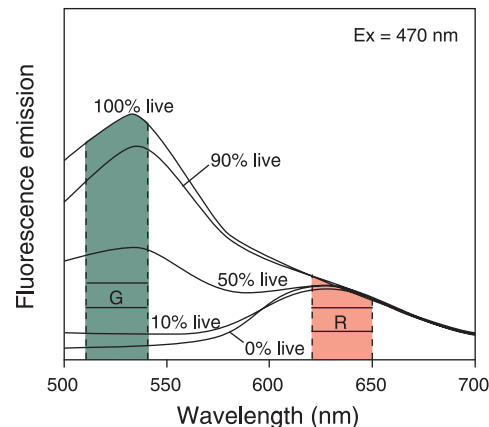
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**Figure 1.** Viability analysis of bacterial suspensions comprising various proportions of live and isopropyl alcohol-killed *Escherichia coli* using the reagents in the *LIVE/DEAD BacLight Bacterial Viability Kits*. Live bacteria are stained fluorescent green (G) by SYTO 9 stain and dead bacteria are stained fluorescent red (R) by propidium iodide. Bacterial suspensions that have been simultaneously incubated in the two stains and then excited at 470 nm exhibit a fluorescence spectral shift from green to red as the percentage of live bacteria in the sample is decreased.

## Molecular Probes offers two additional kits for determining bacterial gram sign and assessing viability:

### LIVE *BacLight* Bacterial Gram Stain Kit (L-7005, L-7008)

This kit provides a one-step fluorescence-based assay for determining gram sign in live bacteria in minutes, without the use of fixation or membrane permeabilization steps. The kit utilizes two nucleic acid stains — SYTO 9 dye, which stains all bacteria, and hexidium iodide, which stains only gram-positive bacteria. Gram-negative bacteria fluoresce green and gram-positive bacteria fluoresce orange-red. Mounting oil for viewing bacteria on filter membranes is included. The kit may be used with a fluorescence microscope, fluorometer or fluorescence microplate reader.

### ViaGram™ Red+ Bacterial Gram Stain and Viability Kit (V-7023)

This kit provides a simple assay that simultaneously differentiates gram sign and discriminates live from dead bacteria. The assay takes only minutes to complete. The kit contains two fluorescent nucleic acid stains — DAPI blue-fluorescent live-bacteria stain, and SYTOX® Green green-fluorescent dead-bacteria stain — and Texas Red®-X wheat germ agglutinin conjugate, a red-fluorescent gram-positive bacteria stain. Mounting oil is also supplied for viewing bacteria on filter membranes. The kit can be used with a fluorescence microscope or flow cytometer.

### On the front

Our *LIVE/DEAD BacLight Bacterial Viability Kits* were used to identify individual live and dead bacteria along a chain of *Streptococcus pyogenes* (Figure A), in a mixture of *Micrococcus luteus* and *Bacillus cereus* (Figure B), on dandelion root (Figure C) and on freshly isolated human cheek epithelial cells (Figure D).