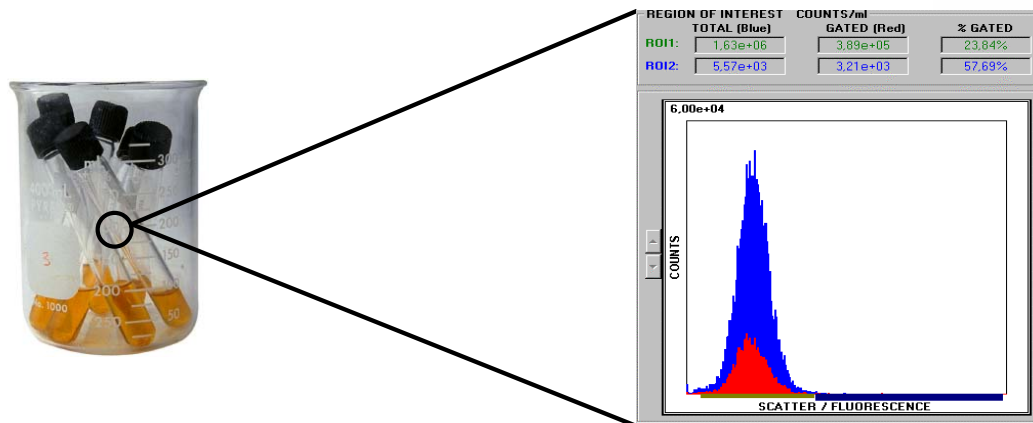


Feb. 6, 07 Application bulletin no 2.01

# Enumeration and viability testing

Rapid method for enumeration and viability testing of bacteria, yeast and animal cells



BioDETECT Rapid Bacteria Testing

Monitoring and controlling bioprocesses is of utmost importance for obtaining optimal product formation and commercially beneficial production. **BioDETECT** provides a system for rapid enumeration and viability testing of cells in starter cultures and fermentation broths based on the **MICROCYTE<sup>®</sup>** cytometer technology and a specific line of reagents.

**Reliability** - scientific method applied in health diagnostics, medicine and food production for several years

**Rapid response** - results within minutes

**Ease of use** - simple, easy to use procedure and instrumentation

**Instrument based analysis** - reducing the risk of subjective human interpretation

**Small** - 12 kg moveable instrument with minimal space requirement

**Proven technology** - with reference customers within the pharmaceutical and food industries

## BioDETECT Instrument family

MICROCYTE<sup>®</sup> Field  
MICROCYTE<sup>®</sup> Aqua  
YEASTCYTE<sup>®</sup>

Easy to use instruments for accurate, rapid and cost effective bio-analysis for the pharmaceutical, biotech, food/beverage industry, military and universities.



MICROCYTE<sup>®</sup> Field & MICROCYTE<sup>®</sup> Aqua

Rapid enumeration or viability testing of various cells is achieved with the MICROCYTE<sup>®</sup> from BioDETECT. In many cases the cells represent close to all the particles in a culture and the cell count may be determined directly as the total counts from light scatter. If the sample contains particles in addition to cells or if additional information about the viability of the culture is required, nucleic acid stains are used to separate the cells from the background and to separate dead cells from live cells. To determine total cell counts, a dye taken up by both live and dead cells is used, SYTO-62<sup>™</sup>\*. Information concerning viability is achieved by performing a "dye-exclusion test". The cells are stained with a dye that is taken up by dead cells only, TOPRO-3<sup>™</sup>\*. The number of fluorescent particles is counted on the MICROCYTE<sup>®</sup> and taken as the total or dead cell count, depending on the stain used.

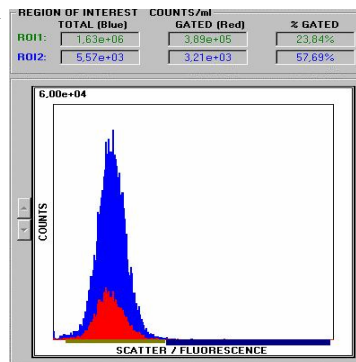


Figure 1: Dead bacteria (*E. Coli*) shown in red.

## Procedure

### 1. Sample preparation

- Withdraw an aliquot from a culture or a fermentation broth and dilute in staining buffer. Analyse directly on the MICROCYTE<sup>®</sup> if no staining with fluorescent dyes is required.

### 2. Staining

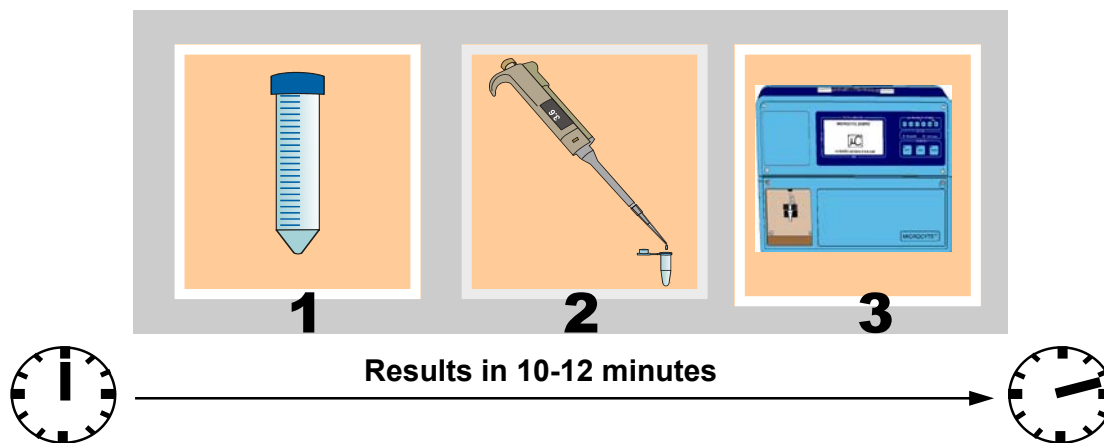
- For total cell counts, add one drop of SYTO-62<sup>™</sup> to 1 ml of diluted yeast cells.
- For dead cell counts, add one drop of TOPRO-3<sup>™</sup> to 1 ml of diluted yeast cells.
- Incubate at room temperature for 1-5 minutes.

### 3. Counting

- Vortex and count on the MICROCYTE<sup>®</sup>.

For a more detailed application note, please do not hesitate to contact us.

\* SYTO-62<sup>™</sup> and TOPRO-3<sup>™</sup> were obtained from Molecular Probes, Inc.



BioDETECT AS, Olaf Helsets vei 5, POB 56 Bogerud, N-0621 Oslo, Norway Phone: +47 22628152 Fax: +47 22628151

[mail@biodetect.no](mailto:mail@biodetect.no)    [www.biodetect.no](http://www.biodetect.no)

BioDETECT develops, manufactures and markets instruments and kits targeted at the pharmaceutical, beverage, water, military/civil defense and OEM markets. The products aim at offering robust, rapid and accurate enumeration and analysis of microorganisms from a liquid, air or powder sample.

**MICROCYTE**