

## Phagocytosis Detection Kit Red

**Catalog# / Size** 421938 / 1 kit

**Regulatory Status** RUO

**Description** Phagocytosis is a complex process for the ingestion and elimination of pathogens. It is also important for the elimination of apoptotic cells, hence fundamental for tissue homeostasis. Phagocytosis consists of recognition and ingestion of particles larger than 0.5  $\mu\text{m}$  into a plasma membrane-derived vesicle, known as phagosome. Professional phagocytes include monocytes, macrophages, neutrophils, dendritic cells, osteoclasts, and eosinophils. These cells are in charge of eliminating microorganisms and presenting them to cells of the adaptive immune system. In addition, fibroblasts, epithelial cells, and endothelial cells can also perform phagocytosis. These nonprofessional phagocytes cannot ingest microorganisms but are important in eliminating apoptotic bodies. Once internalized, the phagosome fuse with lysosomes to form secondary phagolysosomes for digestion, resulting in progressive decrease of pH.

Streamline your phagocytosis research with BioLegend's Phagocytosis Detection Kit Red. This ready-to-use fluorimetric assay kit is designed for analysis of phagocytic activity in live cells. This kit provides a simple, sensitive method to monitor cellular uptake using pH-activated **Phagocytosis Detection Beads**. These latex beads are conjugated to a red dye which is non-fluorescent at neutral pH but dramatically increases fluorescence upon internalization into acidic phagosomes. This kit also includes **Viability Dye Green** enabling simultaneous measurement of cellular uptake and cell viability in a single assay. This dual-color approach provides critical context by distinguishing between reduced phagocytosis due to cellular dysfunction versus specific inhibition of the phagocytic process.

### Product Details

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**Verified Reactivity** Human, Mouse

**Reported Reactivity** All Species

**Formulation** 1 vial Phagocytosis Detection Beads, 15  $\mu\text{L}$   
1 vial Viability Dye Green  
1 vial DMSO, 100  $\mu\text{L}$

**Storage & Handling** 4°C

**Application** [Live cell imaging - Quality tested](#)  
[FC - Verified](#)

**Recommended Usage** Refer to protocol

**Application Notes** **Component:**  
1 vial (15  $\mu\text{L}$ ) Phagocytosis Detection Beads (2-8°C, protected from light)  
1 vial Viability Dye Green (2-8°C, protected from light)  
1 vial (100  $\mu\text{L}$ ) DMSO (room temperature)  
*Note: all unused stock solutions should be divided into single-use aliquots and stored at -20°C after preparation. Avoid repeated freeze-thaw cycles.*

**Required Materials Not Included:**  
Buffer: Phosphate-buffered saline (PBS), phenol-free media, or HBSS  
Complete growth media (cell type dependent)

**Detection/Imaging Guidelines:**  
Phagocytosis Detection Beads  
Ex/Em = 570/600 nm  
Fluorescence microscope filter set: Texas Red  
Flow cytometry channel: PE with yellow/green laser excitation

Viability Dye Green  
Ex/Em = 490/525 nm  
Fluorescence microscope filter set: FITC  
Flow cytometry channel: FITC

**Prepare Reagents:**

1. Bring all three components to room temperature: Phagocytosis Detection Beads, Viability Dye Green, and DMSO  
*Note: all unused stock solutions should be divided into single-use aliquots and stored at -20°C after preparation. Avoid repeated freeze-thaw cycles.*
2. Viability Dye Green: Prepare **stock solution of Viability Dye Green** by adding 20 µL of DMSO.
3. Then, prepare the desired amount of **Viability Dye Green working solution** in preferred complete growth media by adding 5 µL of the stock solution to 2 mL growth media. Mix well.  
*Note: all unused stock solutions can be aliquoted into single-use vials and stored at -20°C, protected from light.*
4. Phagocytosis Detection Beads: Prepare desired volume of **Phagocytosis Detection Beads working solution** in complete growth media by adding 4 µL for every 1 mL growth media. Mix well.

#### Live-Cell Imaging Assay Protocol:

1. Add 16 µL of **Phagocytosis Detection Beads working solution** to every 200 µL of your preferred complete media. You may add the **Phagocytosis Detection Beads working solution** directly into each well of adherent cells in complete media. Cells should be about 80% confluent.  
**Note:** Final concentration may need to be optimized by end user for certain cell types and assay conditions.
2. Incubate cells at 37°C for 4 hours.  
**Note:** The incubation time may need to be adjusted according to cell type and assay conditions.
3. Add 16 µL of the **Viability Dye Green working solution** to every 200 µL media in cell culture wells.  
**Note:** Final concentration may need to be optimized by end user for certain cell types and assay conditions.
4. **Optional:** include live-cell nuclear counterstain such as DRAQ5™ (Cat. No. 424101).
5. Incubate cells at 37°C for 30 minutes.
6. Gently wash cells twice with PBS, phenol-free media or HBSS.
7. Add sufficient amount of PBS, phenol-free media or HBSS to the wells and proceed immediately to livecell imaging.

#### Flow Cytometry Assay Protocol:

1. Resuspend cells ( $1-2 \times 10^6$ ) in 200 µL of PBS, HBSS, or Cell Staining Buffer (Cat. No. 420201).
2. Add 16 µL of **Phagocytosis Detection Beads working solution** to the cell suspension.  
**Note:** Final concentration may need to be optimized by end user for certain cell types and assay conditions. You may also prepare single color tubes for cell only, PE, and FITC for compensation.
3. Add 16 µL of **Viability Dye Green working solution** to the cell suspension.  
**Note:** Final concentration may need to be optimized by end user for certain cell types and assay conditions.
4. Incubate at 37°C for 1 hour.
5. Wash cells twice with PBS, HBSS or Cell Staining Buffer. After the second wash, gently remove supernatant from the cell pellet.
6. Resuspend in 200-300 µL of PBS, HBSS, or Cell Staining Buffer
7. Proceed to flow cytometry analysis using an appropriate filter set.

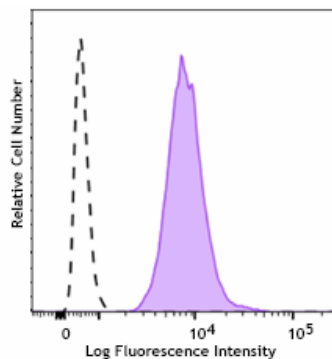
## Antigen Details

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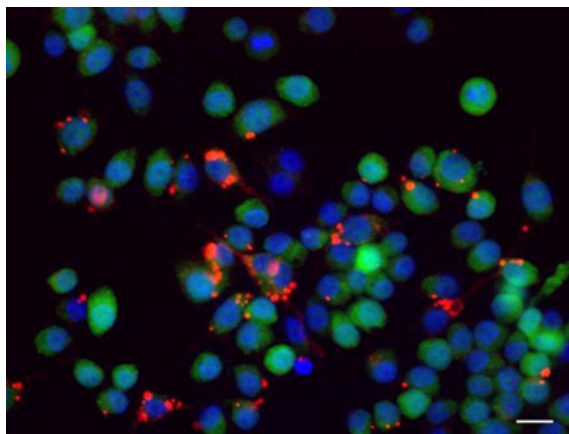
<b>Distribution</b>	Phagocytes
<b>Function</b>	Phagocytosis activity
<b>Cell Type</b>	Dendritic cells, Macrophages
<b>Biology Area</b>	Cell Biology, Immunology
<b>Molecular Family</b>	Organelle Markers
<b>Gene ID</b>	NA

## Product Data

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THP-1 cells were treated with Phagocytosis Detection Beads and Viability Dye Green for 1 hour (filled histogram) or left untreated (open histogram). Cells were analyzed on flow cytometer using PE channel.



Live-cell fluorescence imaging of RAW264.7 cells treated with Phagocytosis Detection Beads (red) in complete growth media for 4 hours. Cells were then stained with Viability Dye Green (green) for 30 minutes and nuclei were stained with Hoechst 33342 (blue). Images were captured using a 60X objective. Scale bar: 10  $\mu$ m

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