



# Colorimetric Assay for Microbial Screening

**IP Status:** Pending US Patent; **Application #:** 16/073,092

## Microbial Screening with Plasmonic Nanomaterial Coating

Cell nanocoating is being used in a food safety application to detect and quantify total microbial content (e.g., bacteria, fungi, viruses, Archaea, protists and gram-negative and gram-positive bacteria). In this technology, a plasmonic nanomaterial interacts with a phylogenetic surface marker (PSM) on a microorganism to coat the microorganism. As the nanoparticles aggregate on the surface of the microorganism, the presence and/or quantity of the microbe is determined by either measuring changes in colorimetry, spectroscopy or electrochemistry or by capturing, separating and identifying the microorganisms (e.g., via culture, PCR or microarray). The technology can be used as a homogeneous assay or can be adapted into a lateral flow assay (LFA) and may identify the class, subclass or even the particular identity of the microorganism.

## Accurate Microbe Detection in Less Than 30 Minutes

Current “rapid microbial detection” technologies may require up to 48 hours to provide results. Food safety agencies, diagnostic laboratories and the food industry prefer inexpensive cell culture and microscopic identification yet require reliable results in under two hours—the critical time frame for food producers to monitor the quality and safety of their products before shipping. This new technology, which is receptor-free, is faster and more cost effective than any other available technology, producing results in less than 30 minutes.

### BENEFITS AND FEATURES:

- Microbial detection in less than 30 minutes
- Plasmonic nanomaterials bond with phylogenetic surface markers (PSM)
- Microbial presence detected by colorimetry, spectroscopy, electrochemistry, culture, PCR or microarray
- Assay may be homogeneous or adapted into a lateral flow assay (LFA)
- Receptor-free technology is faster and more cost effective
- Could reduce food loss by allowing rapid detection of spoilage agents and early intervention to delay deterioration
- Detection of plant and tree diseases

### APPLICATIONS:

- Food testing, food safety
- Precision agriculture and forestry
- Diagnostic laboratories
- Drug manufacturers
- Environmental monitoring

**Phase of Development** - Proof of Concept

### Researchers

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### Technology ID

20160257

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