Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information and Figures

Identification of Pathogenic Bacteria in Complex Samples Using a Smartphone Based Fluorescence Microscope

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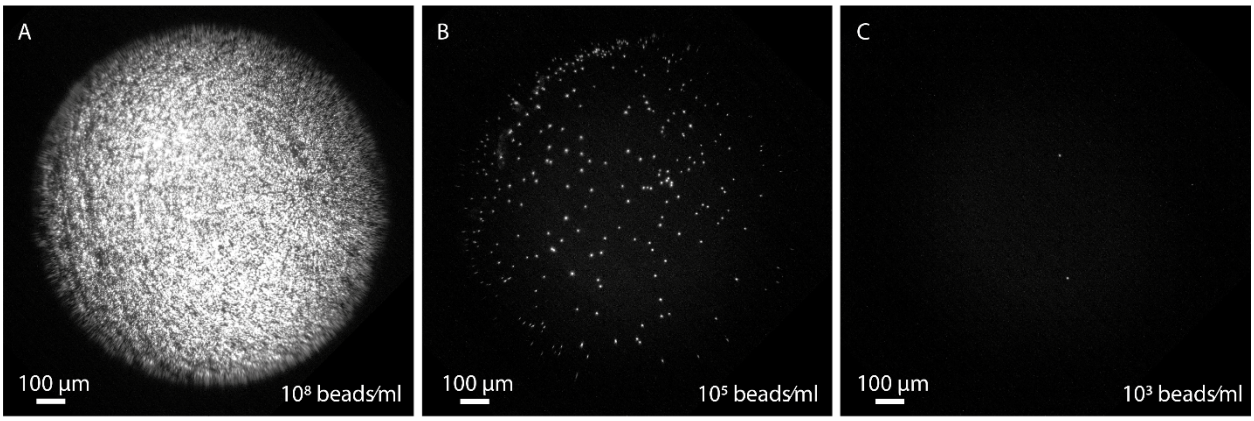

Figure S1. Examples of images acquired with the smartphone-based fluorescence microscope at different concentrations of fluorescent beads (500 nm). *Images showing the entire field of view of the smartphone microscope with beads concentrations of A) 10^8 beads/mL, B) 10^5 beads/mL and C) 10^3 beads/mL.*

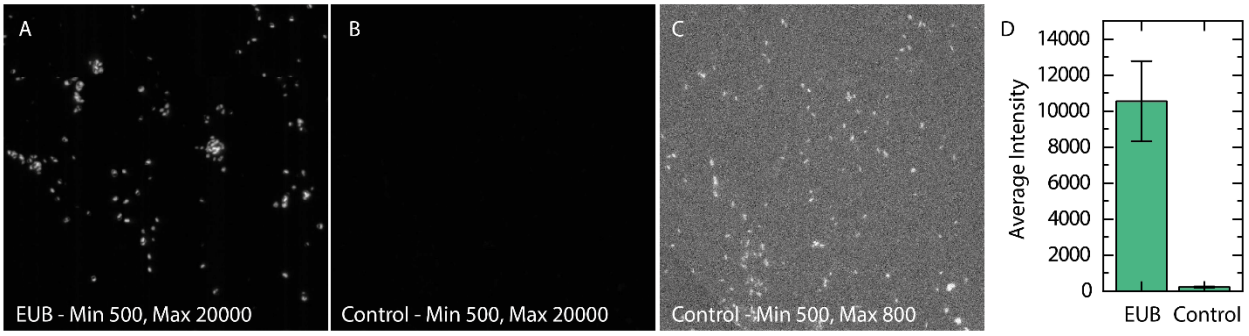

Figure S2. Comparison of average intensity of signal from EUB PNA-probe (fluorescence) labeled and unlabeled (autofluorescence) Cronobacter bacteria. *A) Image of EUB labeled Cronobacter spp. bacteria using a conventional fluorescence microscope (63x oil immersion objective, FITC filter set). B and C) Image of unlabeled Cronobacter spp. (control) using the same experimental settings as for A. Pixel values displayed between 500 and 20000 in A and B, and between 500 and 800 in C). D) Average intensity values (background subtracted) for the EUB labeled bacteria and control sample in raw 16-bit tiff images.*

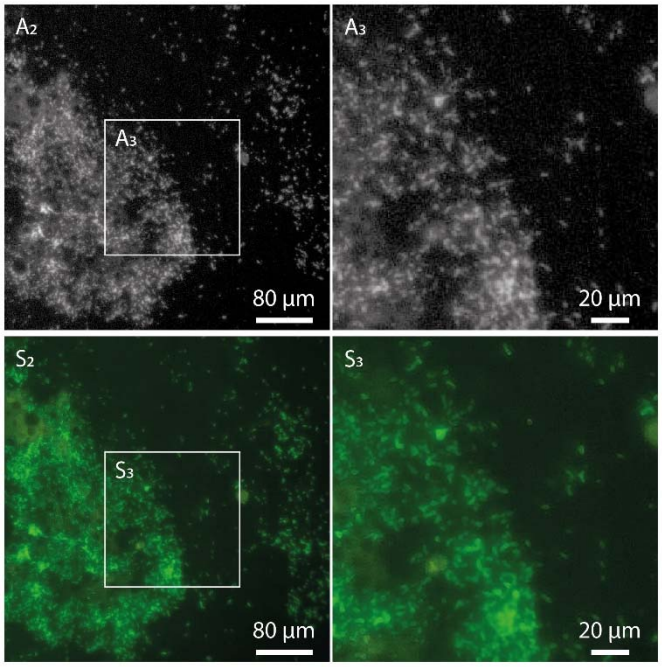

Figure S3. Detection of bacteria in powdered infant formula directly on smartphone screen. *Comparison of raw (DNG) smartphone images (A_2 and A_3, as shown in main text) and a compressed (JPEG) image (S_2 and S_3, corresponding to A_2 and A_3) which is of the same quality as shown on the display of the smartphone after capturing an image. The bacteria are clearly visible also in the compressed image found directly on the smartphone screen, allowing identification without any subsequent data processing.*

Method M1. *ImageJ Macro used for counting fluorescent particles in both smartphone and benchtop images.*

```
name=getTitle;
run("32-bit");
run("Duplicate...", " ");
name2=getTitle;
run("Gaussian Blur...", "sigma=200");
imageCalculator("Subtract create", name,name2);
selectWindow("Result of "+name);
setAutoThreshold("Default dark");
//run("Threshold...");
setAutoThreshold("Otsu dark");
setOption("BlackBackground", false);
run("Convert to Mask");
run("Morphological Filters", "operation=Closing element=Disk radius=1");
run("Watershed");
run("Analyze Particles...", "display add");
selectWindow(name);
roiManager("Show None");
roiManager("Show All");
```