

DropSense16 App – Culture OD600

Measuring bacterial and/or cell cultures using the DropSense16



Fig 1. App button on the DropSense16 app selection screen



Fig 2. Illustrations of the results display

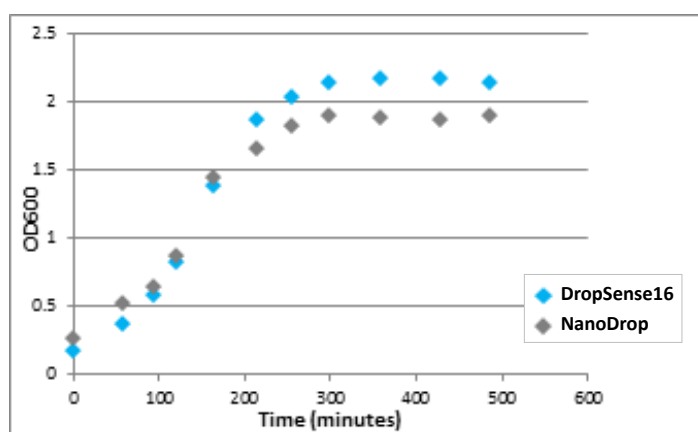


Fig 3. Bacterial cell culture measured on different timepoints on both DropSense16 and NanoDrop 2000.

Introduction

In microbiology, optical density measurements at 600 nm (OD_{600}) are used to monitor growth of bacterial cultures. An OD_{600} application is now available on the DropSense16. The measured UV/VIS spectrum is used to determine the optical density of suspension samples at 600 nm. This note describes how to use this application and how to interpret its results.

App description

It has to be noted that this is not a purely absorbance based application, but both absorbance and the amount of light scattering at 600 nm is used as a measure for bacterial growth or density of a colloidal suspension. At first use, it is recommended to determine the optimal bacterial harvest density empirically as each spectrophotometer reacts differently to light scatter. For proper use of this application, always use a proper blank(s) on DropSense16 slides: water or the appropriate buffer.

Results

Growth of a bacterial cell culture was monitored by measuring the OD_{600} at different time points (figure 3). Measurements were run in parallel on the Xpose and Nanodrop 2000 (figure 3). The shape of the growth curve is comparable between DropSense16 and Nanodrop, but Nanodrop slightly overestimates DropSense16 in the beginning of the growth curve and starts to underestimate towards the stationary growth phase of the bacterial culture.

Table

Position	Sample name	OD600
A1	LB	0.68
B1	1/2	3.55
C1	1/5	2.08
D1	1/10	1.32
E1	1/20	1.29
F1	LB	0.68
G1	1/2	3.88
H1	1/5	2.11
A2	1/10	1.33
B2	1/20	1.20
C2	LB	0.69
D2	1/2	3.61
E2	1/5	2.16
F2	1/10	1.41
G2	1/20	1.28
H2	H ₂ O	-

Graphs

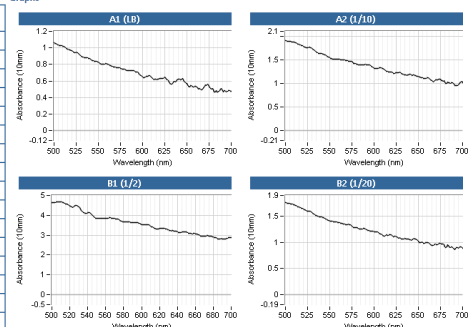


Fig 4. Example of HTML report

Report

Four report types are generated: an HTML file, XML, txt and a CSV file (for import in MS Excel). All reports contain a table with the measured OD600 values. In addition, for each separate measurement, the HTML report contains graphs with cDrop curves (see figure 4, bottom). These reports are easily exported from DropSense16 to a USB key, network folder or to a smart device (using the QR code). In addition, a DropSense16 specific measurement file (.bin) is also exported.



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