FAQ List

Our Top 20 FAQ – intern usage only!

Top 20 - Questions and answers – fluidlab R-300

Category	Question	Answer
Calibration Curve	Can I export the calibration curve?	With the current version of the anvajo datalab it is not possible to export the calibration curve.
CC & VIA	What is the maximum number of cells that can be counted with the cell counter or viability tool?	The recommended concentration range is from 1 x 10^4 to 1 x 10^7 cells/ml. However, this depends on the size of the cells and the arrangement of cells. If cells are large or tend to cluster, high concentrations may be not reliably counted. If the cell concentration is too high for reliable detection, the fluidlab will show an overfull warning on the results screen.
CC & VIA	What is the upper/lower size limit of cell detection?	3µm - 80µm for cell counter, 8 - 80µm for viability
CC & VIA	Can bacteria be counted with the device?	No, because bacteria are too small and the CC requires a cell size of at least 3 µm (in diameter).
CC & VIA	Where do the rings around the cells come from?	The images acquired with the fluidlab R-300 look different than conventional bright field (BF) images, because we employ a different microscopy approach called digitial holographic microscopy (DHM). Contrary to BF microscopy, the image is not created by lenses. Instead, diffraction of light at the sample creates a hologram which is captured on the camera sensor. The hologram contains all the information about the sample, but cannot be interpreted by the human eye. Instead, the image of the sample is reconstructed numerically by a computer. The rings around the cells in the image are remainings/artefacts from the hologram but do not influence the cell recognition. As we keep improving the image reconstruction algorithms, we may be able to get rid of these rings in the future. (Analogy: Think about these rings as the water waves that form when you throw a stone into the water. The shape of these waves on the water surface will tell you something about the stone that caused them, even though you cannot see the stone anymore.)

CC & VIA	Why is the cell count in the viability measurement lower than in the cell count measurement?	The difference between the total count in the viability application and the count in the cell count application can be manifold: 1. The lower cut off of the viability application is 8µm (compared to 3µm for the cell count application). When cells are smaller than 8µm, they won't be counted by the viability application, but maybe counted in the cell counter (depending on the gating). 2. The quantification of cell viability is a two step process: 1) All objects within the image are detected (similar to the cell counter). 2) Then, every detected cell is analyzed individually and categorized one of the two categories: Living cells and dead cells. Maybe if the sample consist of a lot of cell clusters, it could be for the algorithm to difficult to distingusih these cells between live or dead.
CC & VIA	How does the fluidlab R-300 identifiy viable vs. dead cells?	Using holographic microscopy, the fluidlab R-300 is able to perform a staining-free/label-free differentiation between viable and dead cells. This differentiation is based on the refractive index and highlights the morphological and structural changes induced during cell death. Those visible differences are recognized by the fluidlab R-300's neural networks which then classifies cells to the respective category. For an extended explanation please see the document "Staining-free cell viability analysis with the fluidlab R-300".
datalab	When connecting the device via hotspot with the datalab, no connection can be established when typing in the name of the fluidlab. Is there another way to recognize the device?	When the fluidlab cannot be found by typing in the name, the user should try the workaround via the hotspot IP-address. The hotspot IP-address can be found when entering the menu on the device and clicking on "hotspot". For an extended explanation please see the document "Troubleshooting_Hotspotconnection".
Device software	How can saved results be deleted?	Go to the history tab and click on the box before the test name. A red trash icon appears, allowing the user to delete single or multiple results. If you click on the box in the top line, all measurements will be marked. This allows you to delete the entire history.
Device software	How many measurements can be saved on the device?	The device can save up to 1.000 measurements. The exact number can vary, depending on the type of measurements that are saved. Cell count and viability measurements use up the most memory. We recommend to delete regulary the history on the device after 250 measurements.

Device software	Why Sensor Refresh?	For reliable cell counting and viability assessment, it is crucial that the correct acella sample carrier is detected. The corresponding sensor should be regularly calibrated for proper acella recognition. If acella recognition fails, it is essential to recalibrate the sensor by performing a sensor refresh.
Extinction	Why scatter light measurement for measurement of bacterial cultures?	Scattered light measurements are used to monitor the growth of bacterial cultures. The more bacteria are in the sample, the more light gets scattered and the extinction increases. Thus, the extinction over time can be used to create a bacterial growth curve.
Extinction	Can half-micro or micro cuvettes also be used for extinction measurements and the calibration curve?	We recommend using macro or half micro cuvettes for extinction measurements and the calibration curve application. The centre height of the cuvette (=height of light beam) shall be 8.5mm. When using half-micro cuvettes we recommend using the scatter light adapter, so that light is limited to the sample and does not pass through the cuvette material.
Extinction	What is the difference between absorption and scatter light measurement?	When light travels through a sample, it can interact in different ways with the molecules/particles in the sample. Some of the incident light will get scattered, i.e. it changes its direction relative to the incoming beam (think about billard: when the white ball (=incoming light) hits the other balls (=sample particles), it deviates from its original path). The more particles are in the sample, the more the light will get scattered and less of the incoming light will reach the detector. Additionally, depending on the molecules, some of the particles will just absorb the incoming light (e.g. colored dyes), which depends a lot on the wavelength of the light. Both scattering and absorption together determine the extinction of light as travels through the sample, i.e. the loss in light intensity between the incoming and the detected light.
General	How long is the warranty of the device?	1 year
Hardware	What does the "Sensor Status" option check?	The "Sensor Status" checks whether the microscope sensor is clean or dirty. Checking the sensor status is a quality control procedure for maintaining the fluidlab R-300's measuring functionality and accuracy. When the sensor status displays "dirty", the device should be cleaned according to the instructions in the user manual or the respective video in the anvajo youtube channel. The device shall only be used for further measurements if the sensor status 'OK' is displayed.

Hardware	Why does the R-300 not require calibration (neither spectrometer nor CC)?	The fluidlab R-300 is calibrated during the production process, but does not require any further calibration or maintenance at the user. This is because the fluidlab R-300 does not contain any moving parts that may get misaligned or that wear out (e.g. lenses). Moreover, sophisticated computer algorithms ensure accurate and reproducibe results both for the spectrometer and the holographic microscope (CC) by controlling light exposure and focus, respectively, for each measurement.
Hardware	Can I spray the device with desinfect for cleaning?	Yes, the surface of the device can be sprayed with disinfectants. We recommend using isoproponal (99%). Check out the respective video on the anvajo you tube channel for cleaning the device.
Sample Carrier	Can the acella be used multiple times?	No. The acella is a single-use slide. It is not possible to load the acella with different samples in order to perform multiple measurements. It cannot be guaranteed that all particles will be removed from the acella by "cleaning" the chamber.
Sample Carrier	I aspired 20µl sample liquid into my pipette but the acella 100 is not completely filled up to the min mark. What should I do?	Softly knock the sample carrier on the table so the liquid sinks a little bit down. Otherwise just add a few more microliters into the carrier. When loading the acella, make sure the pipette tip is set directly at the entrance to the measuring chamber. Otherwise, a small part of the sample might remain in the half circle.