



# IKOSA®

## Application Documentation

Application Name	Fungi REPAINT Assay
Version	1.0.0
Documentation Version	10.10.2019 - 1
Input Image(s)	Single Image (standard, RGB)
Input Parameter(s)	None
Keywords	phenomic, fungus, fungi, spore, growth, conidium, hypha, phenotype, plate, well, multiwell, 96, photo, biolog, macro, assay, microplate
Short Description	Quantification of fungal phenomics (conidia and hyphae coverage) in a 96-well Biolog microplate.
References / Literature	

## Table of Contents

<b>IKOSA® Image Analysis</b>	<b>2</b>
<b>Application Description</b>	<b>2</b>
<b>Further Information</b>	<b>2</b>
<b>Requirements</b>	<b>3</b>
Input Image(s)	3
Input Parameter(s)	3
<b>Results</b>	<b>4</b>
Files	4
Description of files	4



IKOSA

## IKOSA® Image Analysis

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## Application Description

This application automatically measures the relative conidia and hyphae coverage in the 96 wells of a Biolog FF microplate. This microplate includes 95 carbon sources and water.

In the following, the requirements for an accurate analysis are given and the output of the applications is described.

## Further Information

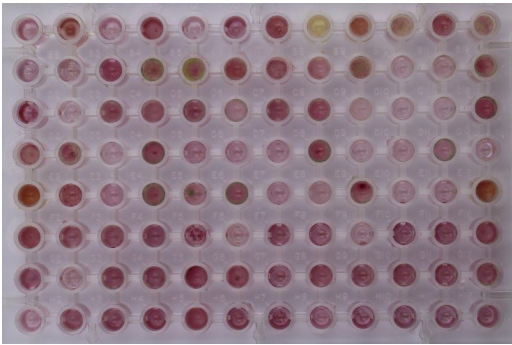
If you have any questions regarding this application or if you want to know if your specific type of images can be analyzed, please get in touch with us at [support@kmlvision.com](mailto:support@kmlvision.com). Also, if you have requests or ideas regarding additional image analysis applications that you would require, please get in touch with us at [support@kmlvision.com](mailto:support@kmlvision.com).

For more information, please visit [www.ikosa.ai](http://www.ikosa.ai).

# Requirements

## Input Image(s)

Input for this application is the following image data:

No.	Image data	Type of image	Color Channels	Color Depth (per channel)	Size [Px]	Resolution [µm/Px]
#1	Single image	Standard	3 (RGB)	8 Bit	Min: 5472 x 3648 Max: 7245 x 4830	Min: 19 Max: 25
<p><b>Image Content:</b> Photo of standard Biolog multiwell plate with 96 wells.</p> <p><b>Additional requirements:</b></p> <ul style="list-style-type: none"> <li>• The dimensions of the multiwell plate must be the same as for a Biolog multiwell plate with 96 wells (12.75 x 8.5 cm; well diameter: 5 mm; well distance: ~5 mm).</li> <li>• The diameter of a single well has to be at least 200 Pixel in the image.</li> <li>• The multiwell plate is placed on a homogeneous white background.</li> <li>• The multiwell plate is rotated in a way that labels of wells are shown in correct order (starting with A1 at the top left; see examples below).</li> <li>• The photo was taken under an angle of approximately 90 degrees.</li> </ul> <p><b>Examples:</b></p> 						

For all images, the following requirements apply:

- The illumination must be constant throughout the image(s).
- The sample must be in focus, i.e. no blurry regions in image(s).

## Input Parameter(s)

No additional input parameters are required for this application.



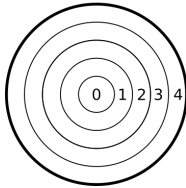
# Results

## Files

No.	File type	Content and Description
1	csv	<i>result.csv</i> : Coverage of conidia/hyphae for each well. See also below (Description of files).

## Description of files

### File no. 1: Single csv-file with the following content (*result.csv*):

Col. no.	Column name	Examples	Value range	Description
1	well	A01	A01-H12	Name of the well.
2	coverage conidia [%]	25	0 - 100	Percentage of the well area, covered with conidia.
3	coverage hyphae [%]	75	0 - 100	Percentage of the well area, covered with hyphae.
4	mean intensity conidia [0,1]	0.60	0 - 1	Mean intensity of the area classified as conidia in the range [0,1], where 0 corresponds to a bright green, and 1 corresponds to a dark green.  Due to different illuminations in the images, the value cannot be compared between different images.
5-14	radial distribution [conidia/hyphae] bin [x] [%]	50	0 - 100	The circular area of the well is divided into 5 annuli. For each annulus with index [x], the percentage of the area covered by conidia/hyphae is given.  A visualization of the annuli and their indices is given shown in the image below:  
15-24	intensity histogram conidia bin x ([a, b]) [%]	0.3	0 - 100	A histogram of the intensities of the area classified as conidia. Each bin contains the percentage of the well area classified as conidia in the intensity range [a, b].