

# Biosciences solutions



Anatomic pathology, Bacteriology,  
Immunology, Serology, Virology...



FDA 21 CFR Part 11

## Biosciences solutions, a range of turnkey systems for your analyses:

- ▶ Anatomic pathology
- ▶ Bacteriology
- ▶ Biochemistry
- ▶ Cytopathology
- ▶ Hematology
- ▶ Histology
- ▶ Immunology
- ▶ Microbiology
- ▶ Serology
- ▶ Virology...

- ▶ Modular and scalable turnkey solutions
- ▶ Full compliance with regulation 21 CFR Part 11 of the FDA
- ▶ Automatic, customized and exportable reporting
- ▶ Traceability, data safety and access level-dependent settings
- ▶ Easily deployed and used
- ▶ Safe, reliable and reproducible results

# Biosciences solutions

Turnkey analysis systems for life sciences.

## SPECIFIC

Pages

Immulab 4



Celest 5



Cosmic 6



Alise 7



Cybèle 8



## GENERAL

Pages

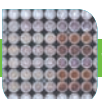
Histolab 9



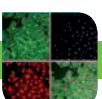
Saisam 10



Cartograph 11



Irys 11



Abys 11



## COMPLEMENTARY

Pages

Microvision Supervision 11

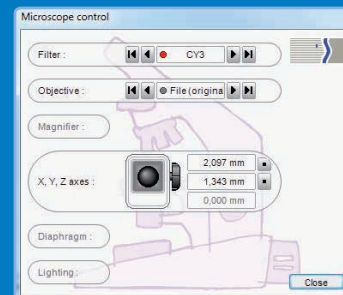
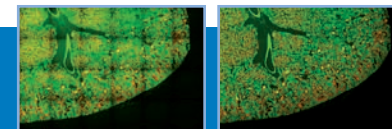
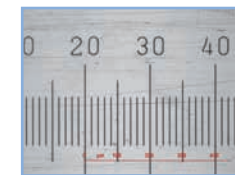


Archimed 11



## Accurate systems

- Calibration function
- Background correction for brightfield illumination and fluorescence



## Integrated, flexible and modular

- Integrated equipment steering and setting: lighting, lenses, filters, diaphragm, exposure time, alignment, calibration, automatic focus...
- Analysis from direct acquisition or based on archived images, videos or mapping (image mosaics)
- Scalable systems compliant with applicable standards in the pharmaceutical industry

## Experts

- Creation of automatic and customized reports
- Creation of study templates
- Results are exportable to a spreadsheet, calculation software or with the copy/paste function
- Reports recorded in MVR format and exportable in pdf



## Selection guide

	Immulab	Celest	Cosmic	Alise	Cybèle	Histolab	Saisam	Cartograph	Irys	Abys	Microvision Supervision	Archimed
Anatomic pathology						•	•	•		•	•	•
Bacteriology	•			•	•	•	•				•	•
Biochemistry						•	•	•			•	•
Cytopathology		•				•	•	•			•	•
Hematology						•	•			•	•	•
Histology						•	•			•	•	•
Immunology	•	•	•					•	•		•	•
Microbiology					•						•	•
Serology	•										•	•
Virology		•	•	•				•	•		•	•



### Accessories:

Joystick - mapping / cartography review  
Micrometer - calibration  
Barcode reader



Compatible with Zeiss, Nikon, Olympus, Motic, Optika devices...



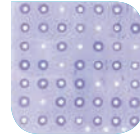
**OS:** compatible with Windows 7, 8, 8.1 and 10  
**RAM:** 8 to 16 GB

**Processor:** iCore 7 minimum  
**Peripherals and interfaces:** USB3 port and/or PCI express slot

## SPECIFIC SYSTEMS

### Immulab - Serology, immunology, bacteriology

Immulab allows to control the dosing of **serums** using radial immunodiffusion and to measure **antibiotic** efficiency using antibiogram readings.



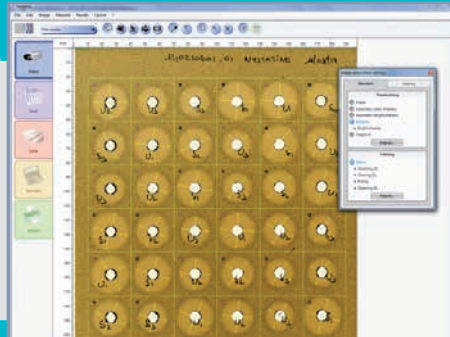
#### Acquisition

- High resolution A3/A4 scanner, transmitted light

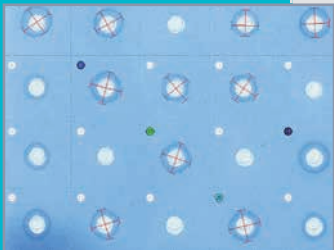


#### Settings/parameters

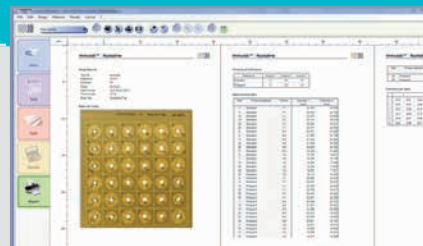
- Study configuration: features of the plate and identification of studied products and their dilutions
- Randomization diagram: adjustable grid superimposed on the image



#### Automatic measurement



- Diameter of precipitation arcs, aureole diameters
- Possible manual override - FDA-compliant traceability
- Detection methods: general (integrated), specific (plugins), automatic (without setting), configurable (ring thickness, contrast...)
- Thresholding adapted to the homogeneity of the lighting
- Customized filtering

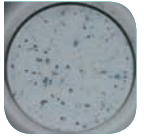


#### Results

- Measured diameters
- Ordered on a grid that matches well locations
- Grouped in charts based on products/dilutions

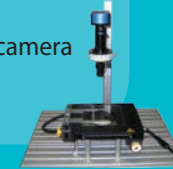
### Celest - Virology, immunology, cytopathology

Celest is a **cell cultures** reader operating by means of **viral range** detection.



#### Live

- Microscope zoom and camera
- Motorized stage
- Brightfield illumination



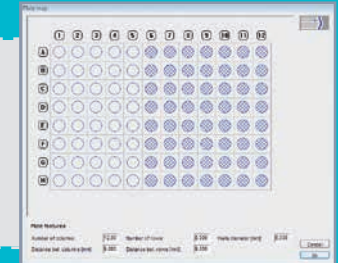
#### Offline

- Mapping files, whole slide images

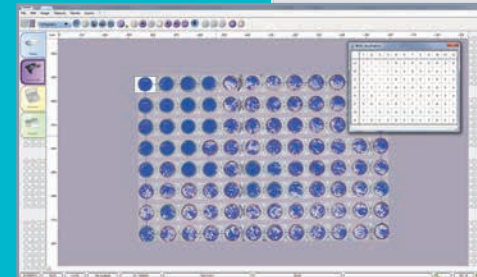


#### Settings/parameters

- Customized well display: active or inactive, positive/negative/undefined/uncategorized
- Plate definition: number and content of the wells



#### Automatic measurement



- Automated analysis:
  - Thresholding adapted to the contrast of the images, to the size of the ranges, to the homogeneity of the lighting
  - Filtering: standard or customized, removal of artefacts
  - Removal of unwanted ranges according to dimension or morphology criteria
  - Well categorizing (positive/negative) by min and max thresholding of the surface ratio
- Automatic or step-by-step exploration
- Operator validation, FDA-compliant traceability

#### Results

- Binary table of well categorizing: positive/negative

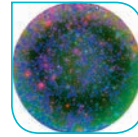
	1	2	3	4	5	6	7	8	9	10	11	12
A	1	1	1	1	0	0	0	0	0	0	0	0
B	1	1	1	1	0	0	0	0	0	0	0	0
C	1	1	1	1	0	0	0	0	0	0	0	0
D	1	1	1	0	0	0	0	0	0	0	0	0
E	1	0	1	0	1	1	0	0	0	0	0	0
F	0	0	0	0	0	1	1	1	0	0	0	1
G	0	1	0	0	0	0	0	0	0	0	0	0
H	1	0	0	0	0	0	0	0	0	0	0	0



## SPECIFIC SYSTEMS

### Cosmic - Virology, immunology

Cosmic measures the **therapeutic activity** in **fluorescence** by counting spots on **Elispot** plates.



#### Live

- ▶ Microscope zoom and camera
- ▶ Motorized stage
- ▶ Fluorescence or brightfield illumination, motorized filter turret
- ▶ Protection cabinet - optional



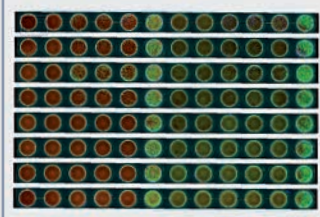
#### Offline

- ▶ Mapping files, multichannel whole slide images, acquired in fluorescence
- ▶ 96 well analysis on 3 colours performed in 35 seconds

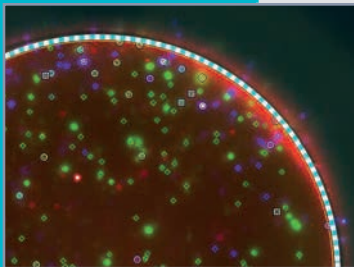


#### Settings/parameters

- ▶ Definition of well areas
- ▶ Specification of customized filters
- ▶ Indication of the number of cells for each well



#### Automatic measurement



- ▶ Automatic spot detection:
  - Thresholding adapted to the homogeneity of the lighting
  - Filtering: removal of detection artefacts
  - Separation of agglomerates
- ▶ Adjustable detection parameters for each area
- ▶ Double or triple colouring depending on spot positions (adjustable)
- ▶ Possible manual override: spots addition, removal and move - FDA-compliant traceability

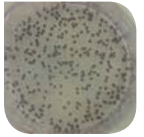
#### Results

- ▶ Activity table for each well, number of detected spots
  - Per quantity of cells
  - Per filter/channel and by filter combination



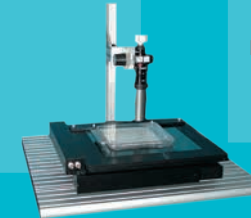
### Alise - Bacteriology, virology

As an alternative to DICC50 method, **Alise** is an automated **lysis area reader**.



#### Live

- ▶ Microscope zoom and camera
- ▶ Motorized stage
- ▶ Brightfield illumination



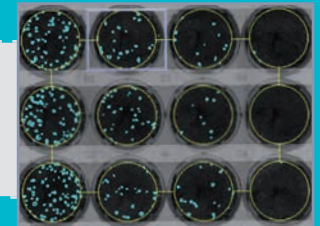
#### Offline

- ▶ Mapping files / whole slide images of 6 to 96 well plates

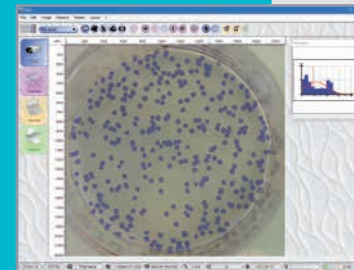


#### Settings/parameters

- ▶ Definition of well area



#### Automatic measurement



- ▶ Automated lysis area detection:
  - Thresholding: fixed, adaptive or colour-based
  - Filtering: artefacts removal
  - Separation of areas agglomerates
  - Filtering based on size or morphologic criteria
- ▶ Automatic or step-by-step exploration
- ▶ Possible manual override: lysis area addition, removal or move - FDA-compliant traceability

#### Results

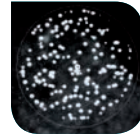
- ▶ Statistic table
- ▶ Histogram of distribution for lysis diameter
- ▶ Counting table



## SPECIFIC SYSTEMS

### Cybèle - Bacteriology

Cybèle counts **bacterial colonies** on any type of agar in large plates and gives dilution-based results.



#### Live

- A3 scanner or
- Camera and macro bench



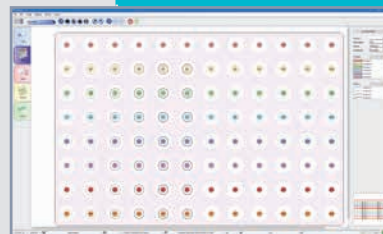
#### Offline

- Mapping files, whole slide images

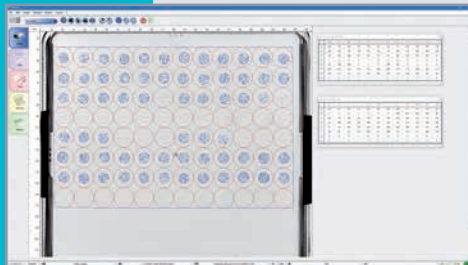


### Settings/parameters

- Features of the agar plate: position and number of drops, distance between drops
- Exploration map: adjustable analysis grid superimposed on the image



### Automatic measurement

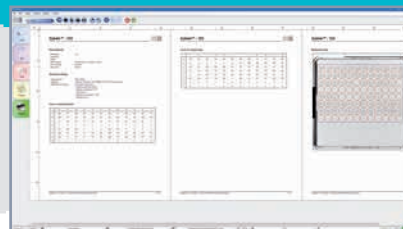


- Automated analysis:
  - Thresholding: automatic, relative or adaptive
  - Filtering: artefact removal
  - Separation to individualize the colonies
  - Counting
- Automatic or step-by-step exploration

- Possible manual override: colonies addition, removal - FDA-compliant traceability

### Results

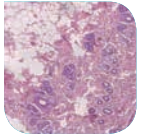
- Counting table: number of colonies per drop



## GENERAL ANALYSIS SYSTEMS

### Histolab - Histology, morphometrics, counting

**Automatic** histology and morphometric **measurements**: counting, cell membrane monitoring, density, automatic measurement of tissue surface associated with a colouring, absorption and emission measurement...



#### Live

- Inverted microscope
- Encoded or motorized stage
- Fluorescence or brightfield illumination - Motorized filter turret



#### Offline

- Mapping files, whole slide images
  - Brightfield illumination or fluorescence
  - Single or multiple channels
- Compatible with image scanners (whole slide imagers): Hamamatsu, Zeiss, Nikon...

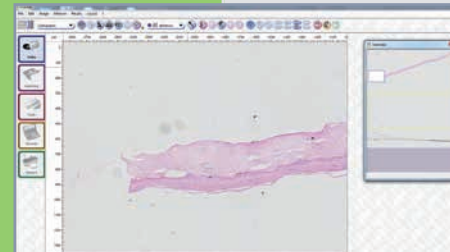


### Settings/parameters

- Characterization of the sample to be analyzed
- Definition of structures to be measured
- Selection of the detection method
- Selection of measurement areas



### Automatic measurement

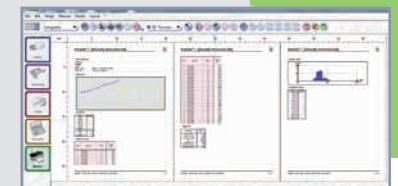


- Automatic detection of structures:
  - Fixed or adaptive thresholding based on the lighting homogeneity
  - Automatic or customized filtering, removal of artefacts
  - Separation of detected objects
  - Filtering based on geometric criteria

- Comprehensive set of interactive measuring tools: automatic or manual (counting, drawing of lines and contours, thickness measurements...)

### Results

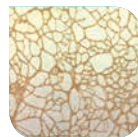
- Measurement in real units: position, length, width, equivalent diameter, median, thickness, perimeter, surface area, counting, relative or absolute intensity
- Full table and distribution histogram
- Counting table and statistic values
  - Objects sorted by structure or measurement area



## GENERAL ANALYSIS SYSTEMS

### Saisam - Histology, morphometrics

**Aided morphometric analysis:**  
simultaneous measurement of several classes of objects



#### Live

- 3-axis motorized microscope



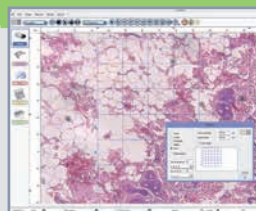
#### Offline

- Image files issued by:
  - Optical microscopy
  - Scanning Electron Microscopy



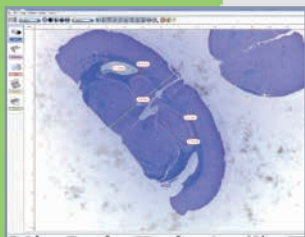
#### Settings/parameters

- Characterization of the sample to be analyzed
- Class definition (object categories)
- Selection of a measurement area



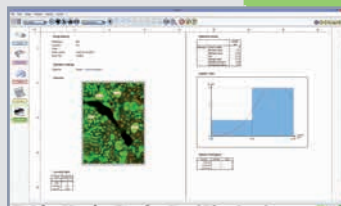
#### Measurement

- Comprehensive set of interactive measuring tools: counting, segment drawing, lines and contours, angular measurements...
- Semi-automatic modeling of light or dark particles
- Annotation/captioning of measured objects: order number, measured size
- Note editor, scale inclusion, display of time and date, arrows and symbols



#### Results

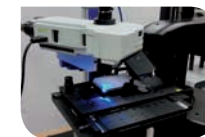
- Counting and statistical values
- Measurements in real units: position, length, width, elongation, Feret diameters, projection on the axis, orientation, equivalent diameter, radius, perimeter, surface area, form factor.
- Counting table: object number, per category and field
- Class-based statistical table: number of values, min and max values, sum, average, standard deviation, confidence interval at 5%
- Displayed as scatter plots (with linear regression and inertia ellipsoid), distribution histogram, compass rose.



## GENERAL ACQUISITION SYSTEMS

### Multidimensional image acquisition systems

Have been designed for all your image acquisitions, whatever the constraints of the sample to be analyzed: oversized and / or uneven sample, single or multi-channel fluorescence observation, routine automated acquisition of a large number of sample (Irys).



#### They offer:

- **Extended depth of field and field of view**
- **Edition of customized reports**
- **Multifocal stacks and cartographies** that can be opened and used by all the Microvision analysis systems

#### Abys

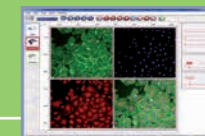
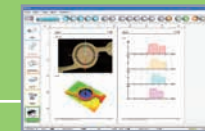
Multifocal stacks, profiles and 3D rendering  
Single channel

#### Cartograph

Image mosaic, Z-stack  
Single channel

#### Irys

Image mosaic, Z-stack  
Multichannel/fluorescence



→ **For more info, ask for our specific Multidimensional image acquisition documentation**

## COMPLEMENTARY TOOLS

### Microvision Supervision

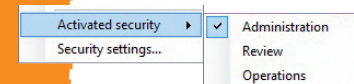
**Compliance** FDA 21 CFR Part 11

Microvision Supervision is an audit trail plugin which offers **data safety, event logging** for all your analyses.



**Compatible with the full range of Microvision systems and applications, this plugin offers:**

- FDA 21 CFR Part 11 compliance
- Data safety
- Traceability of studies



### Archimed

**Acquisition, archiving and processing of images and videos**

ARCHIMED enables to create **archives** that are stored in Microsoft Access™ or SQLite format **database**. Beyond archiving function, Archimed includes several modules to **acquire and process image and video**: Acquisition, Report, Image processing, Extended Focus, Cartography, Movie and sequence.



→ **For more info, ask for our specific Archimed and FDA 12 CFR Part 11 Compliance documentations**

Modular and easy to use, the Microvision Biosciences solutions are comprehensive and scalable turnkey systems for your life science analyses. Used in private and public research facilities, analysis laboratories, or pharmaceutical production sites, Biosciences solutions are used for research purposes, clinical trials, production controls...

### Specific analysis systems

- ▶ **Immulab**: Control of the **dosage** of a **serum**, measurement of the **antibiotics efficiency**
- ▶ **Celest**: Reading of **cell cultures** - detection of **viral ranges**
- ▶ **Cosmic**: Measurement of the **therapeutic activity** in fluorescence - **ELISA** method
- ▶ **Alise**: Automated **lysis area** reader
- ▶ **Cybèle**: **Colony count** on large plates

### General systems for acquisition and analysis

- ▶ **Histolab**: **Automatic histology** and **morphometric** measurements
- ▶ **Saisam**: Semi automatic **morphometric** measurements
- ▶ **Cartograph**: Acquisition of **whole slide images** and **multifocal stacks**
- ▶ **Irys**: Acquisition of **whole slide images** and multifocal stacks in **fluorescence**
- ▶ **Abys**: Acquisition of multifocal stacks and **3D rendering**

### Complementary tools

- ▶ **Microvision Supervision**: ensures **compliance with FDA 21 CFR Part 11**
- ▶ **Archimed**: **Archiving** and post processing of your data (images, videos, analysis reports...)

### Support and services

- ▶ Maintenance contract
- ▶ Technical assistance
- ▶ Advice and expertise, training



*«By choosing Microvision, you can rely on:*

- *Our expertise in object characterization on microscopic and macroscopic scales - over 25 years serving the industry and life sciences*
- *User friendly systems developed in partnership with the key industrial players»*

**Olivier HUIN, President of  
Microvision Instruments**