LabSat® Research
Ultra-rapid automated IHC/IF staining

LabSat® is a compact and open automated tissue staining instrument for IHC/IF.

For Research Use Only. Not for use in diagnostic procedures.
LabSat® Research is an automated staining instrument, consisting of one chamber where one tissue slide can be placed for staining. LabSat® is based on a cutting-edge microfluidic technology, capable of carrying out IHC/IF staining cycles within a few minutes, in a highly precise and reproducible manner. This technology breakthrough together with a fully open system, bring a flexible solution at the reach of medium and small laboratories.

The ultra-fast turnaround times as well as the possibility of using your primary antibodies and detection kits of choice, make LabSat® Research a great tool for protocol optimization in unprecedented times.

LabSat® Research is operated through a simple, user-friendly computer interface:

- Application protocol templates with pre-selected parameters for optimal results
- Numerous customization options to fit researchers' needs
- Reports generation for tracking purposes
- Fully automated solution: automated calibration as well as walk-away function at the end of the day
- Clear overview of the instrument status
LabSat® features

Open system
LabSat® Research provides you with many customization options in order to explore the full potential of your research.

Ultra–rapid turnaround time
Thanks to a microfluidic technology called FFeX and a pressurized system, incubation times are dramatically reduced by accelerating the reagent flow inside the staining chamber.

High quality stainings
The closed staining chamber allows ultra-rapid and uniform delivery of reagents onto the tissue section, producing homogenous signal intensity across the area of confinement. Short incubation times limit the exposure of the tissue to harsh conditions and prevent tissue degradation over prolonged assay times.

Compact automation
LabSat® is a Swiss-made automated stainer of small dimensions. This benchtop device brings a solution at the reach of medium and small research laboratories.
“I was extremely impressed with the quality of results we achieved with Lunaphore’s technology. It would normally take us 2 days to perform a 5-color immunofluorescent tissue staining, but with Labsat® it took us only 30 minutes.”

Dr. Spencer Watson
Ludwig Institute for Cancer Research
Johanna Joyce Laboratory, Lausanne

Applications
LabSat® Research is a powerful research tool that can help you automate a wide range tests involving tissue incubation protocols, such as IHC, IF and multiplexing, among others. To fine-tune your tests, LabSat® offers the possibility to modify protocol steps, select different incubation parameters or choose your own reagents.

Thanks to LabSat® short turnaround times, you can accelerate the optimization of your incubation conditions and dramatically reduce the overall test time.

The system allows as well the possibility to create your own Laboratory Developed Tests (LDTs) in order to transfer them from the Research environment into IVD use.

Workflow
Tissue preparation (+ Dewaxing*)
Antigen Retrieval1
Primary Ab
Secondary Ab
Detection3
Counterstain
Mounting & Coverslipping + Image acquisition

FFPE IHC
FFPE IF
FS IHC
Multiplexed IF

1 For FFPE sample | 2 Peroxidase / Protein block (optional) | 3 Not required if secondary antibody conjugated | 4 For multiplexing
Located at the heart of the “Health Valley” in Switzerland, Lunaphore is a medtech company born as a spin-off of the Swiss Federal Institute of Technology with the vision of bringing -omics like approaches to tissue analytics and dedicated to innovate in cancer research.

Lunaphore specializes in ultra-rapid and automated solutions, performing IHC/IF stainings. LabSat® is the result of +10 years of research. The company has been recognized as one of the most innovative companies internationally.

##### About Lunaphore

**Na-K ATP-ase, FFPE IF, tonsil**

Total staining time: 30 minutes

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**A unique microfluidic tissue processor**

**Fast Fluidic Exchange Technology**

The staining chip, core of the Fast Fluidic Exchange Technology (FFeX), forms a chamber over the tissue sample where the staining takes place.

In LabSat®, a pressurized system moves reagents through a network of microfluidic channels and delivers them into this hermetic chamber almost instantaneously.

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**Prof. Dr. med Alex Soltermann**

Surgical Pathology
University Hospital Zürich

“The technology is very promising for obtaining more homogenous and quantitative immunohistochemistry across whole tumor section.”

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**Closed Chamber**

This micro-chamber enables the homogenous incubation of reagents on the tissue

**Temperature Controlled**

Fine-tuning of temperature conditions is key to achieve a high performance of stainings

**Pressure Controlled**

Reagents are delivered to the tissue through active flow

**Ultra-Rapid**

Reagents flow through microfluidic channels, entering and filling the staining chamber.

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**High Staining Precision**

Optimized
## Consumables

### Microfluidic Kit (Required)
Includes the chips required to operate LabSat®.
MK01 – Microfluidic Kit (consumable chips for 25 tests: 25 x Staining chips, 5 x Distribution chips)

### Staining Buffer
Washing buffer solution used during staining protocols.
BU01 - Staining Buffer (1 L, 10X, approx. 1500 slides)

### Alcohol
Ethanol-based solution to be used for staining and washing protocols.
BU02 - Alcohol (1 L, RTU, approx. 150 slides)

### Full Wash
Kit of solutions for automated washing protocols of the instrument.
BU03 - Full Wash (solutions 1, 2 and 3, approx. 300 slides)

### Antigen Retrieval pH 6
Buffer solution for epitope demasking steps on the instrument.
BU04 - Antigen Retrieval pH 6 (500 mL, 10X, approx. 4000 slides)

### Antigen Retrieval pH 9
Buffer solution for epitope demasking steps on the instrument.
BU05 - Antigen Retrieval pH 9 (500 mL, 10X, approx. 4000 slides)

### Multistaining Buffer
Washing buffer used during multiplex IF staining protocols.
BU06 - Multistaining Buffer (1 L, 20X, approx. 1000 staining cycles)

### Staining Buffer
CK18, frozen section of intestine. Total Staining time: 13 minutes.

## Instrument specifications

### FEATURES

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<th>Applications</th>
<th>Fixation: FS, FFPE</th>
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<tr>
<td>Staining</td>
<td>IHC, IF</td>
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<td></td>
<td>Monoplex and Multiplex</td>
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### CAPABILITIES

<table>
<thead>
<tr>
<th>Slide capacity</th>
<th>1 slide</th>
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<tr>
<td>Slide requirements</td>
<td>Thickness: 1 mm</td>
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<tr>
<td>Width: 25 - 26 mm</td>
<td></td>
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<tr>
<td>Length: 75 - 76 mm</td>
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<td>Positively charged</td>
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| Tissue thickness requirements | 3-10 μm |
| Staining area | 23 x 23 mm |
| Temperature control | / |
| Staining time to first marker | 12-18 min (FS) |
| | 20-30 min (FFPE) |

<table>
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<tr>
<th>Software</th>
<th>Software options:</th>
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<td>- LabSat® Research</td>
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<tr>
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<td>- LabSat® Research +</td>
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(Computer optionally included)

| Dimensions | 22 (H) x 37 (D) x 45 (W) cm |
| Weight     | 12.5 kg |
| Capacity   | 8 small volume reservoirs (1.5 / 2 mL Eppendorf® tubes) |
|           | 4 large volume reservoirs (50 mL Falcon® tubes) |
|           | 1 waste bottle (250 mL) |

| Installation requirements | Electrical input: 100-240V – AC 50-60Hz 2.0A |
|                          | Air supply: 5-8 bars at 20 L/min (ISO 8573-1 - 1.4.4) |
|                          | (Compressor optionally included) |

| Catalogue numbers | LS01 - LabSat® Research |
|                  | MK01 - Microfluidic Kit |

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Ultra-fast IF staining signals:

Quantification of HER2 fluorescent signals:

Multiplexing with a microfluidic tissue processor:

Dramatic reduction of the number of ambiguous results: