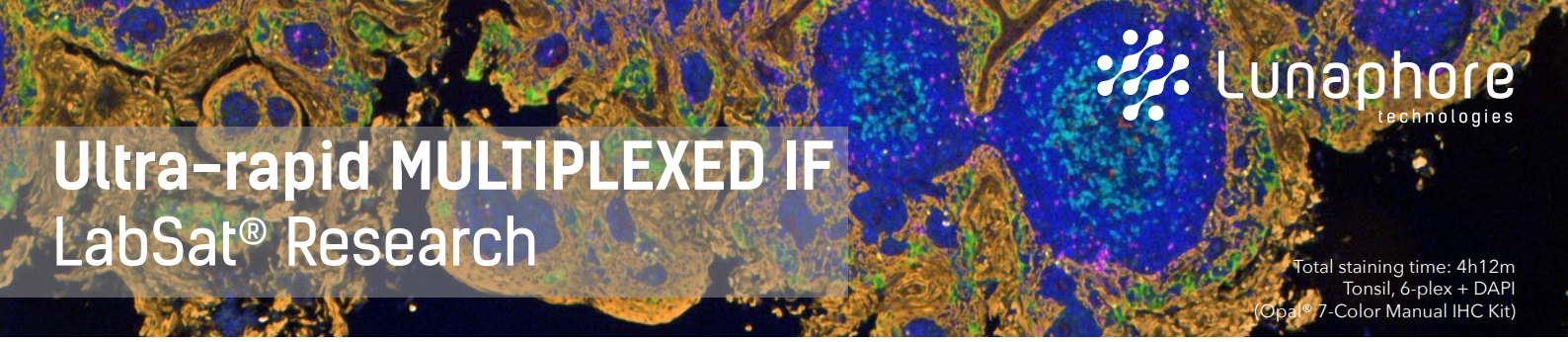
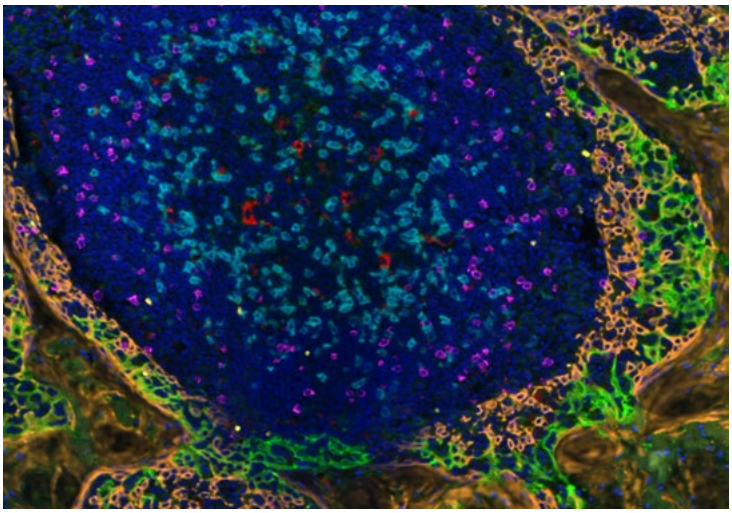
Ultra-rapid MULTIPLEXED IF
LabSat® Research



Multiplexed immunofluorescence

In order to analyze the tumor microenvironment, understanding the spatial organization and co-expression of multiple biomarkers in a tissue section is of key importance. Multiplexed immunofluorescence on LabSat® allows you to stain multiple markers on a single tissue slide, with high quality and uniformity, in record time.



Total staining time: 4h12m Tonsil, 6-plex + DAPI (Opal® 7-Color Manual IHC Kit, AKOYA)

LabSat® Research

+

Multiplexed IF reagents

LabSat® and Opal®

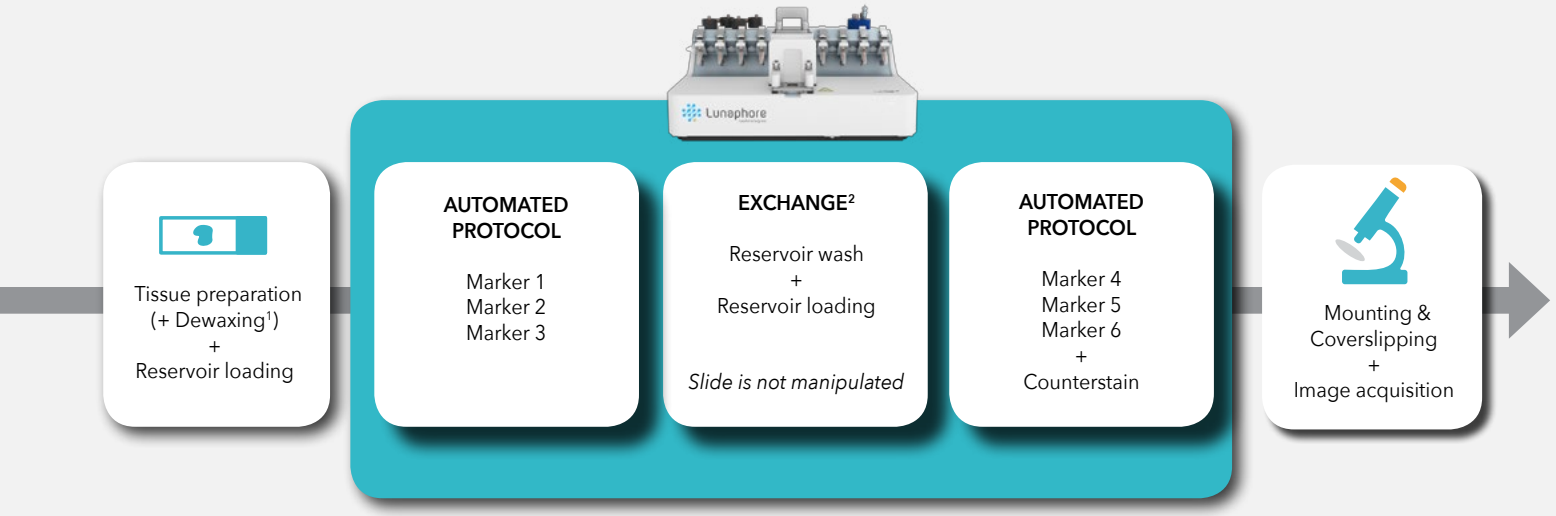
LabSat® Research is an automated reagent delivery system which enables fast protocol optimization with your primary antibodies and detection kits of choice.

LabSat® protocols for Opal® IHC detection kits (AKOYA) have been optimized in order to perform these tests in unprecedented timeframes:

3-plex + counterstaining in ~2h30m
(Opal® 4-Color Manual IHC Kit)

6-plex + counterstaining in ~4h30m
(Opal® 7-Color Manual IHC Kit)

Sample workflow: 6-plex + counterstaining



[1] For FFPE samples
[2] Approximate time for exchange step is 15m.

Ultra-fast IF staining signals:
S. Brajkovic, B. Pelz, M.-G. Procopio, A.-L. Leblond, G. Repond, A. Schaub-Clerigué, D.G. Dupouy, A. Soltermann, "Microfluidics-based immunofluorescence for fast staining of ALK in lung adenocarcinoma", Diagnostic Pathology 2018 13:79, October 2018.

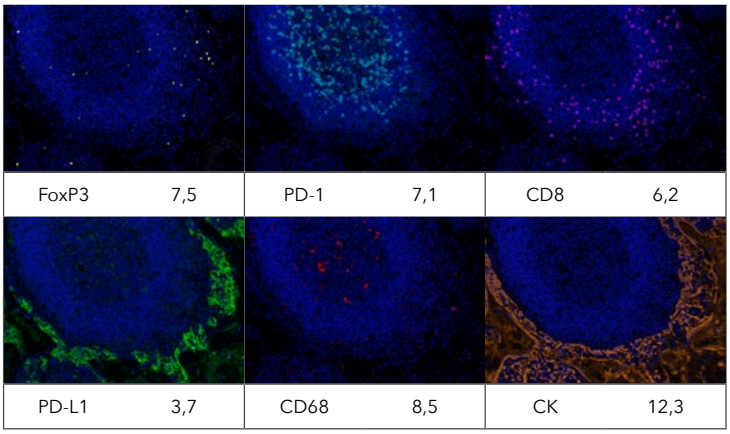
Quantification of HER2 fluorescent signals:
D.G. Dupouy, A.T. Ciftlik, M. Fiche, D. Heintze, B. Bisig, L. De Leval, and M.A.M. Gijs, "Continuous quantification of HER2 expression by microfluidic precision immunofluorescence estimates HER2 gene amplification in breast cancer", Scientific Reports no. 6, pp. 20277, 2016.

Multiplexing with a microfluidic tissue processor:
G. Cappi, D. G. Dupouy, M. A. Comino, A. T. Ciftlik, "Ultra-fast and automated immunohistofluorescent multistaining using a microfluidic tissue processor", Scientific Reports volume 9, Article number 4489, 2019.

Dramatic reduction of the number of ambiguous results:
A.T. Ciftlik, H.-A. Lehr and M.A.M. Gijs, "Microfluidic processor allows rapid HER2 immunohistochemistry of breast carcinomas and significantly reduces ambiguous (2+) read-outs", Proceedings of the National Academy of Sciences USA (PNAS), volume 110, no. 14, pp. 5363-5368, 2013.

High quality stainings

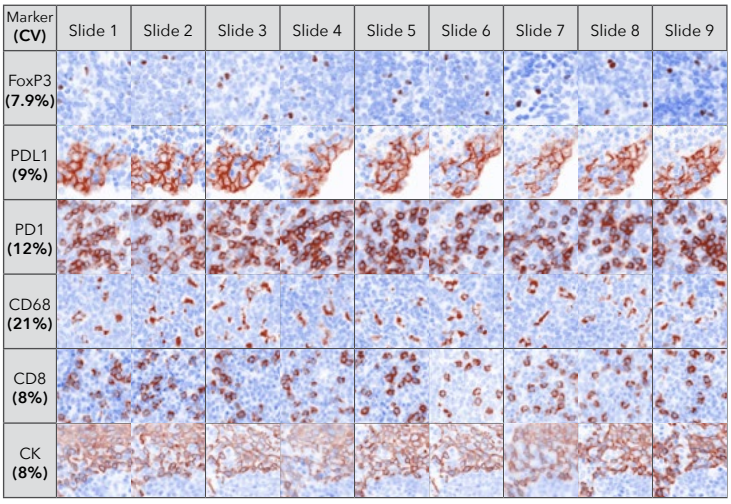
Following a monoplex optimization, a bright and specific signal as well as a high signal-to-background ratio can be achieved with LabSat® for each marker.



NI values: Quantification shows comparable intensity to other staining methods [1, 3]

Reproducible results

The robust system along with automated protocols offer a high degree of consistency in results.



Reproducibility study: 9 sequential tonsil slides[1, 2]

Ultra-rapid turnaround time

The LabSat® platform is based on a unique microfluidic technology capable of a dramatic time reduction.

The reagents travel through the system and are pushed into the staining chamber. Thanks to the Fast Fluidic Exchange technology (FFeX), an active flow of reagents produces a fast exchange at the tissue surface, reducing the required incubation times.

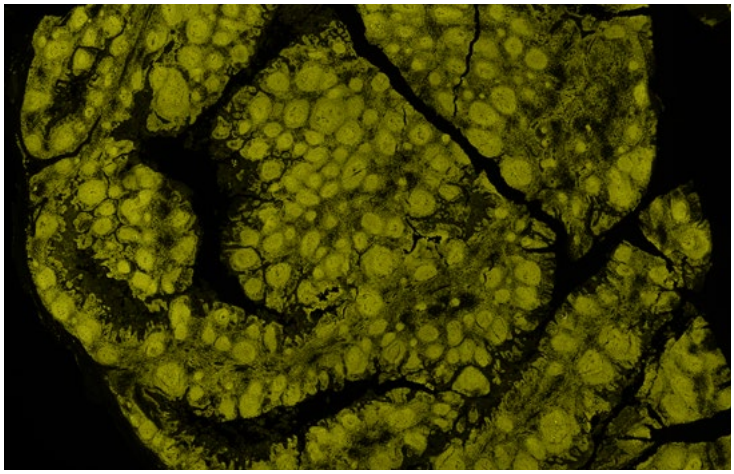
The LabSat® staining chamber is closed and pressurized, thus preventing evaporation and allowing better temperature control even above 100°C.

Interested in LabSat®?
Get in touch with us.

sales@lunaphore.com | www.lunaphore.com

Unmatched uniformity

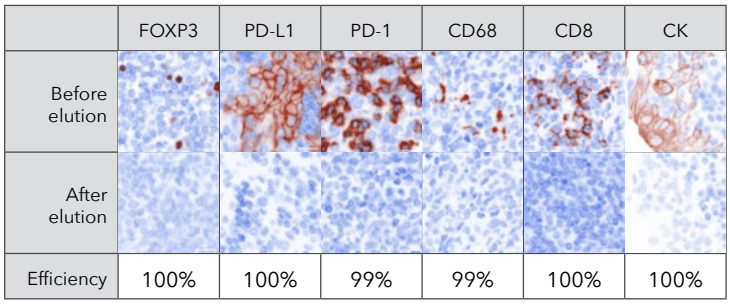
The microfluidic staining chamber of LabSat® is filled almost instantaneously, preventing different areas of the tissue to be incubated unevenly, hence providing a great degree of signal uniformity. This is key for image processing purposes with digital pathology tools such as signal quantification.



FFPE IF, CD20 (Opal® 540, AKOYA), tonsil:
Signal gradient over 1 cm of tissue under 10% [1]

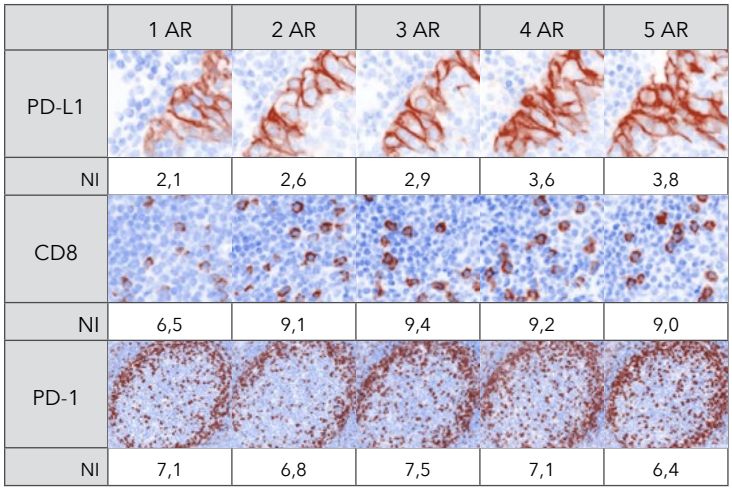
Efficient antibody strip-off

The elution step on LabSat® consists of an active heating-cooling cycle after each marker detection, which successfully strips-off antibodies.



Elution efficiency: over 99% for all 6 markers of the panel [1, 3]

The elution time is optimized. Ultra-rapid incubation times limit the exposure of tissue to harsh conditions, which allows the tissue to be highly preserved, including nuclear morphology and epitope detection.



5 elution cycles show no apparent degradation of tissue morphology [1, 2, 3]

[1] Results obtained with a prototype of LabSat® and Opal® 7-Color Manual IHC Kit (AKOYA), imaged with Mantra™ (AKOYA) multispectral imaging system.
[2] Software-reconstructed brightfield view (Pathology view, Inform, AKOYA).
[3] Mean Normalized Intensity computed with InForm™ on 3 ROI per slide.