Readers

For ELISpot and FluoroSpot

IRIS is our flagship; ASTOR is our ELISpot-only workhorse

Minimized variability

Automated settings ensure analysis free of bias

Anyone can play

Load your plate and press “Read” – it’s that simple

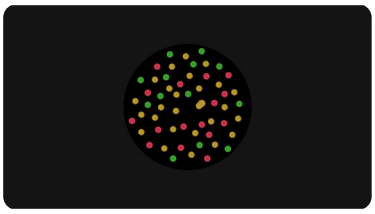
MABTECH

How do the readers work?

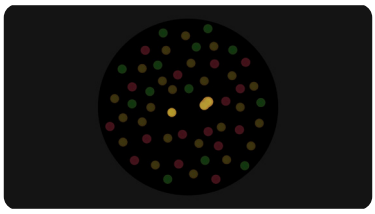
A FluoroSpot or ELISpot assay is straight forward, and to make the acquisition and analysis of the data equally effortless, we developed **Mabtech IRIS™** and **Mabtech ASTOR™**. They simplify your workflow. Just load the plate, select the assay, and press read.

Both readers are based to the RAWspot™ algorithm, ensuring accurate spot center detection and correct counting. Together with the intuitive software Mabtech Apex™, our readers provide a **plug-and-play** system for everyone.

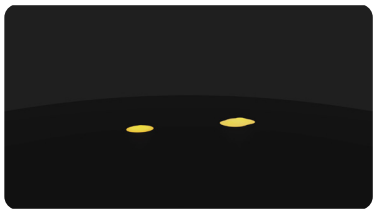
Precise spot center detection for accurate analysis



In FluoroSpot, it's crucial to distinguish single from dual analyte spots.

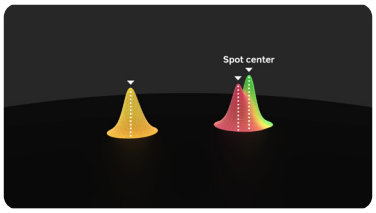


With image analysis, single analyte spots can be mistaken for dual.

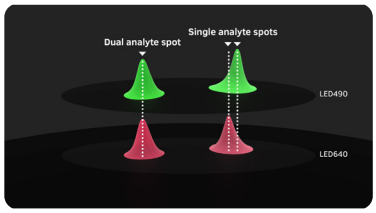


A standard 8-bit image is relatively flat.

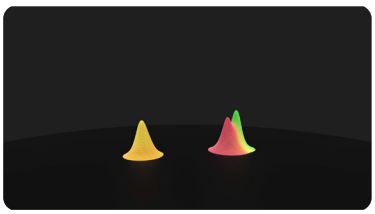
RAWspot uses the **wide dynamic range** of the image RAW signal.



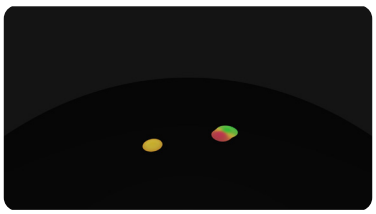
RAWspot finds **the spot center**.



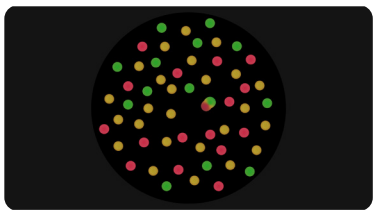
Overlapping spot centers indicate dual analyte spot.



Every spot has a volume corresponding to the amount of secreted analyte.



Accurate spot centers ensure that **multiplexing is reliable**.



RAWspot technology: Scientific signal processing

The development of the RAWspot™ technology resulted in several scientific publications in peer-reviewed journals. Mabtech has been granted a patent for the method in Sweden and has pending patent applications in additional regions.

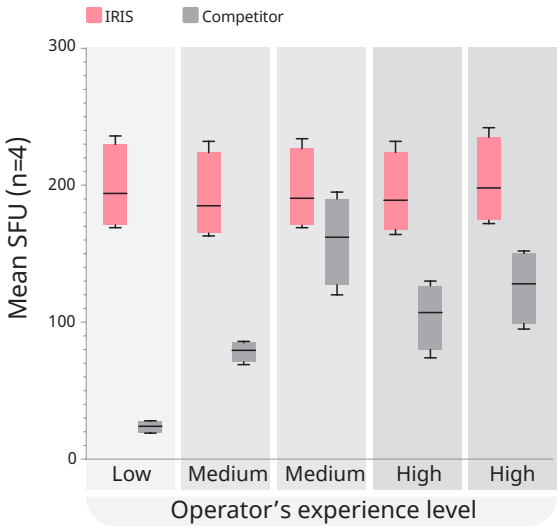
What are the benefits?

IRIS is our flagship, a FluoroSpot/ELISpot reader capable to analyze four analytes simultaneously with unparalleled accuracy and speed. ASTOR is our workhorse, an ELISpot-only reader built to be easy to use and durable.

With fixed focus, optimized default reader settings, and self-calibrating XY table, we developed them to be as intuitive as possible, allowing you to get right into your data.

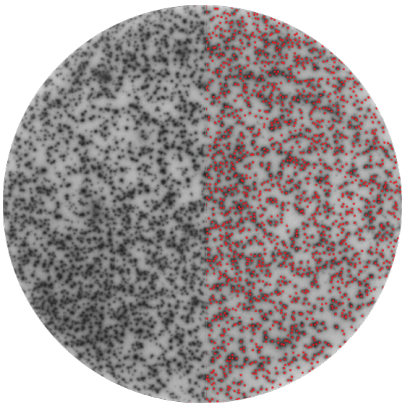
Minimize subjective analysis

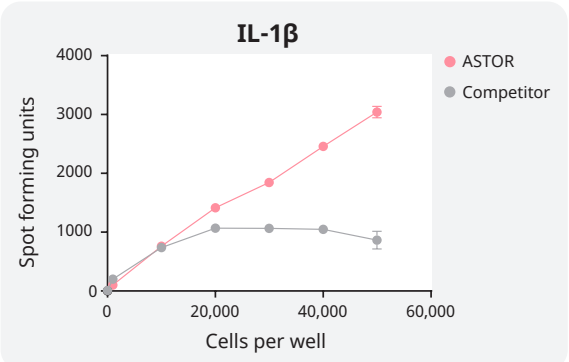
Automated reader configuration and default analysis settings minimize user-defined subjective input and thus reduce bias of the operator. Spot analysis has never been easier.

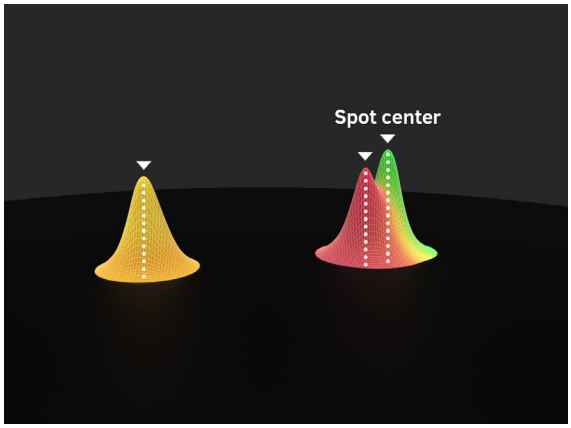


Detect every spot

The readers have no problem identifying distinct spots in a linear fashion without hitting a plateau. As the algorithm is based on signal processing, it provides objective results for immediate analysis. Every spot, be it small, big, faint, or distinct, is detected.







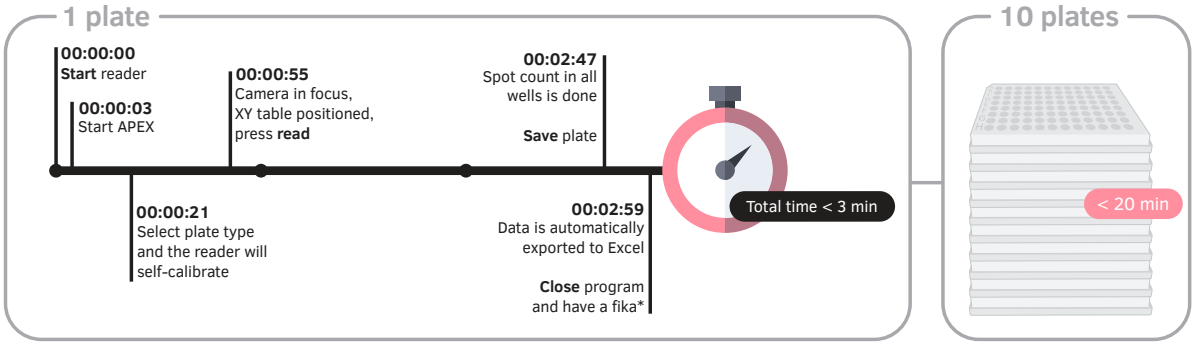
Secretion profile of every cell

Our RAWspot technology depicts the secretion profile of every cell to determine the exact spot center. This ensures reliable spot count as well as accurate identification of multi-analyte secreting cells in FluoroSpot.

The 3-dimensional model allows conclusions about the volume of each spot and provides a measurement for the amount of secreted analyte per cell, the **relative spot volume**.

Quick data acquisition

An overlooked time-consuming aspect of spot assays is data analysis. With reliable data and unprecedented export capabilities, we reduced the time from data acquisition to final analysis to a minimum, facilitating high-throughput and larger studies.



*Fika = Swedish coffee break

Read once, adjust later

After plate reading, you are free to change count settings and experiment with the look of the images without affecting the original data. All signal from the spots are already recorded, so adjustments can be done off-line and you never have to re-read a plate.

A new era of almost-too-easy

Exact spot center
Accurate spot count and multiplexing

New data dimension
Compare the amount of secreted analyte

CFR21 part 11
Apex is ready-to-go

ELISpot
Quick and sensitive results

FluoroSpot
4-color analysis

Optimized settings
Pre-defined settings for plate and assay

Scientific output

Export to Excel or GraphPad Prism

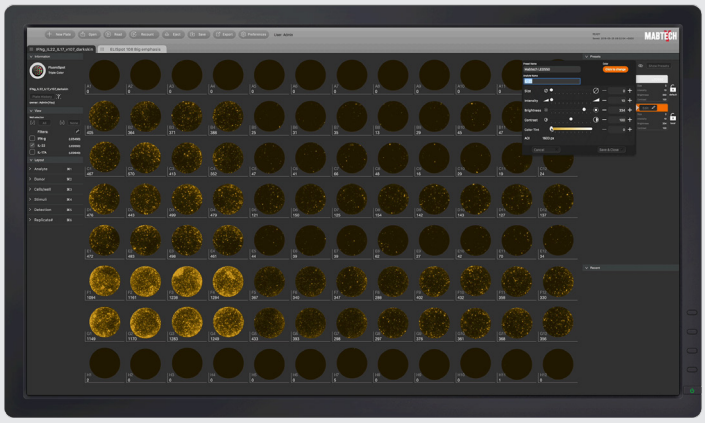
Plug-and-play

Insert plate, press read, and export

CFR21 part 11 compliance

CFR21 part 11 is a set of guidelines issued by the US Food and Drug Administration (FDA) regarding the use of computerized systems in clinical investigations and how acquired source data must meet the same elements of data quality as that of signed paper records.

Our readers are controlled by the software Mabtech Apex™ that has been designed to meet the requirements of CFR21 part 11, including history files, limited access, and time-stamped audit trails.



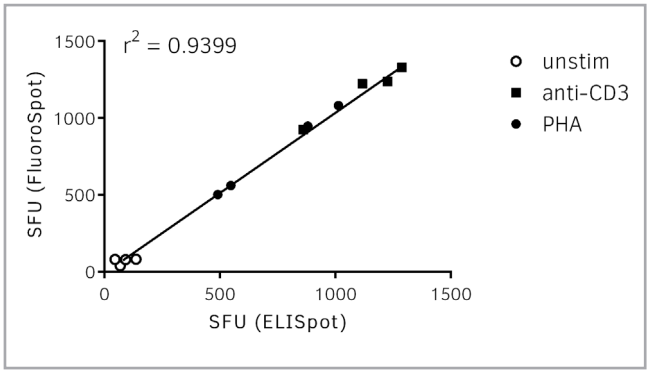
In addition to the basic criteria of CFR21 part 11, extra layers of control have been added:

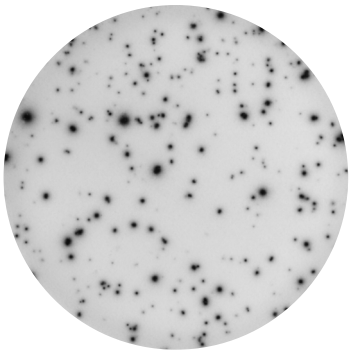
- Well images are processed as image RAW files, containing the untouched signal straight from the sensor. From the moment of capture, **RAW files are never compromised** by the software. As a result, the original data is maintained and cannot be concealed by any user, including the administrator.
- Files are individually validated by a checksum verification within the software. Upon reading, each RAW file is passed through a checksum function and a unique block of data is generated.
- Upon saving, the history audit file is given a unique checksum block of data. Every time a plate is opened, the checksum validation is re-run and controlled against the stored copy, making sure that it matches the original value. If any files are removed, altered or manipulated, the checksum validation will fail and provide an integrity warning. If no warnings, data integrity is assured.

Why spot analysis?

Sensitive and robust

ELISpot and FluoroSpot assays capture analyte immediately after secretion and throughout the stimulation process, and are therefore considered among the most sensitive cellular assays available. Because of the high sensitivity of the assays, they are particularly useful for studies of the small population of cells found in specific immune responses.





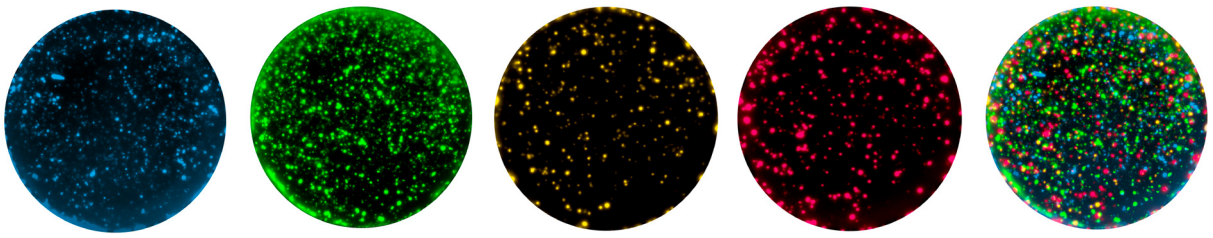
Relevant secretion

In contrast to measurements skewed by receptor binding or protease degradation, the capture of analytes immediately in the well enables analysis of physiologically relevant secretion.

Study 4 analytes at the same time

In FluoroSpot mode Mabtech IRIS allows the simultaneous detection of cells secreting multiple analytes such as cytokines or immunoglobulins by separate fluorescent signals. It is thus ideal for identifying functional subpopulations of cells.

These images show a 4-color FluoroSpot analysis of IL-5, IFN-γ, IL-22, and IL-17A secretion by human PBMCs: Four individual images from the same well and an image overlay, combining images from the four filters.

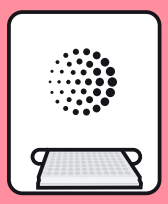


IL-5 IFN-γ IL-22 IL-17A Overlay

That’s the Mabtech way

From product choice to data analysis – using our products should be easy and self-explanatory.

Nevertheless, our team of product specialists and account mangers are here to help. Get in touch with us and we will find a solution for you.



Workshop

Consulting

Demo (onsite/online)

Which reader to choose?

Mabtech IRIS and Mabtech ASTOR are based on the same platform. Each reader is built, calibrated, and validated at Mabtech's headquarters in Sweden, and shipped to users worldwide.

		Recommended
	ASTOR *ELISpot's best friend*	**IRIS** *Spot analysis reinvented*
Applications		
ELISpot	√	√
FluoroSpot	–	Up to 4-color
Hardware		
Self-calibrating XY-table	√	√
Light source: LED(s)	√	√
CMOS sensor with global shutter	Macro	Telecentric
Resolution (H x W)	1200 x 1200 pixels	2048 x 2048 pixels
Plate types: 96-well MSIP and MAIPSWU10	√	√
Computer (included)	Desktop PC	Desktop PC
Software		
Mabtech Apex™	√	√
RAWspot technology	√	√
Export formats: .raw .jpg .xlsx .pzfx	√	√
Reading speed ELISpot	<2 min/plate	<2 min/plate
Reading speed FluoroSpot	N/A	5-13 min/plate
Service		
Warranty: 1-year, with the option to prolong the contract	√	√
IQ OQ	√	√
Regulations		
Compliance with CE, RoHS, REACH, WEEE, FCC, ICES, CFR21 part 11	√	√

Check out our readers

We have gathered more information on our website. Reader related news, publications, and highlighted research summaries are continuously updated. Keep yourself up to date by visiting our website www.mabtech.com or scan the QR-code.

Selected references

Our readers appear in numerous publications ranging from vaccine development to cancer research and autoimmunity. Scan the QR code for a full list of references.

Bronge et al., *Identification of four novel T cell autoantigens and personal autoreactive profiles in multiple sclerosis*, Science Advances 2022

Sandberg et al., *SARS-CoV-2-specific humoral and cellular immunity persists through 9 months irrespective of COVID-19 severity at hospitalization*, Clin Transl Immunology 2021

Achiron et al., *Humoral immune response in multiple sclerosis patients following PfizerBNT162b2 COVID19 vaccination: Up to 6 months cross-sectional study,* J Neroimmunol. 2021

Sherina et al., *Persistence of SARS-CoV-2-specific B and T cell responses in convalescent COVID-19 patients 6–8 months after the infection,* Med 2021

Jahnmatz, P, et al., *Memory B-Cell responses against merozoite Antigens after acute plasmodium falciparum malaria, assessed over one year using a novel multiplexed FluoroSpot assay,* Front Immunol. 2020

Zhang, Y, et al., *Intraperitoneal oncolytic virotherapy for patients with malignant ascites: Characterization of clinical efficacy and antitumor immune response,* Mol Ther Oncolytics, 2022

MABTECH

About Mabtech

Mabtech is a Swedish biotech company that was founded in 1986. Our mission is to aid scientists to reach new frontiers through optimal immunoassays and instruments.

Nacka 11/2022