

# Readers

## For ELISpot and FluoroSpot

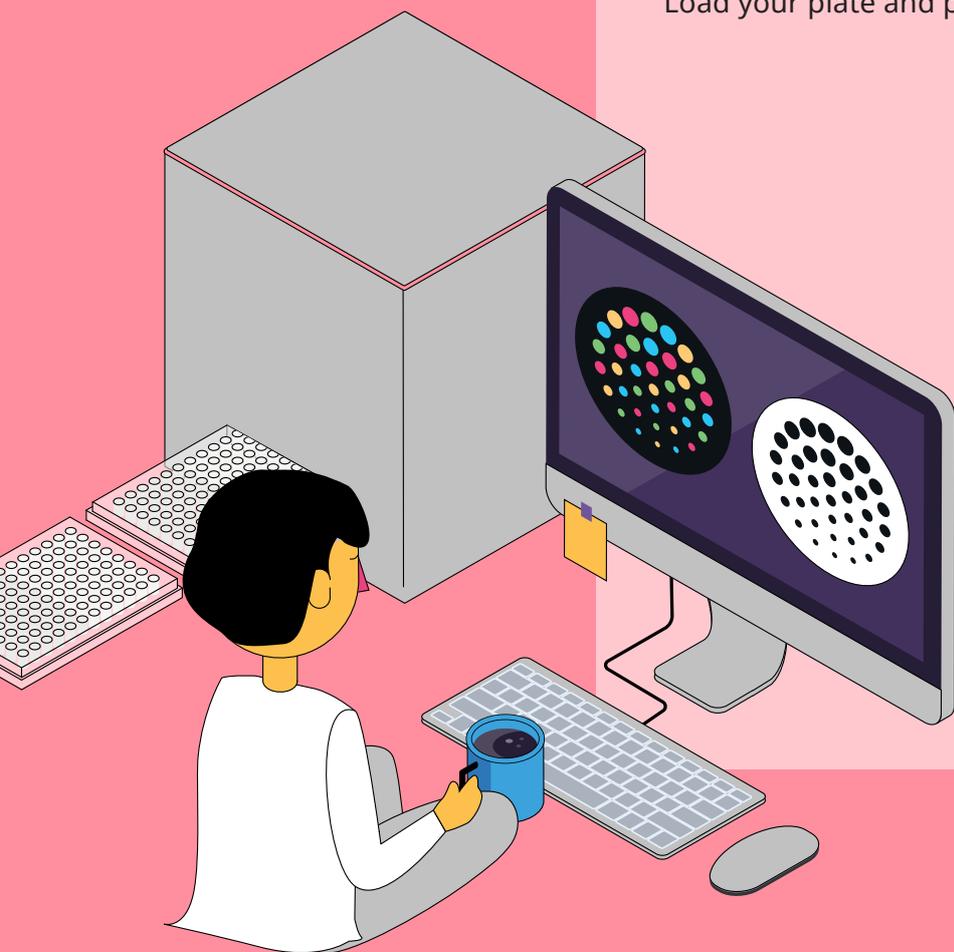
IRIS is our flagship; ASTOR is our ELISpot-only workhorse

## Minimized variability

Automated settings ensure unbiased analysis

## Anyone can play

Load your plate and press "Read" – it's that simple



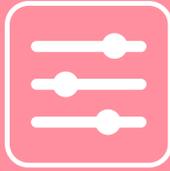
**MABTECH**



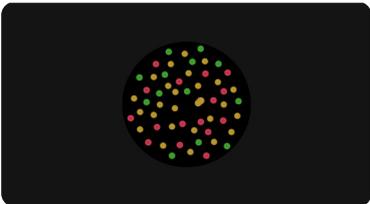
# How do our readers work?

Both FluoroSpot and ELISpot are straightforward immunoassays. To make plate reading and analysis equally effortless, we developed the **Mabtech IRIS™** and **Mabtech ASTOR™**. They simplify your workflow. Just load the plate, select the assay, and press read.

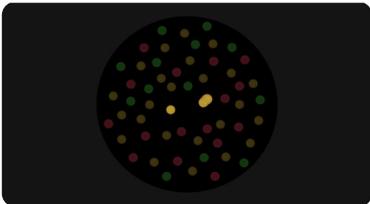
Both readers are based on our novel RAWspot™ algorithm, ensuring accurate spot center detection and correct counting. Together with the intuitive software Mabtech Apex™, our readers provide a **plug-and-play** system like never before.



## Precise spot center detection for accurate analysis



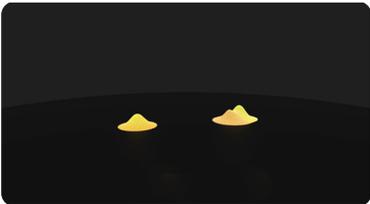
In FluoroSpot, it's crucial to distinguish single from dual analyte spots.



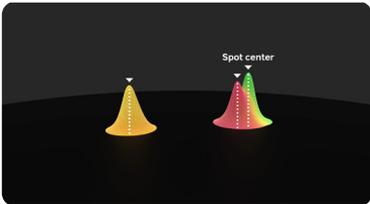
With image analysis, single analyte spots can be mistaken for dual.



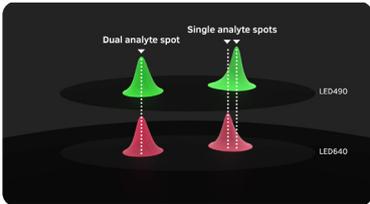
A standard 8-bit image is relatively flat.



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



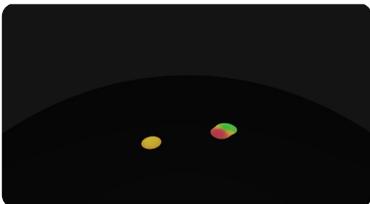
RAWspot finds **the spot center**.



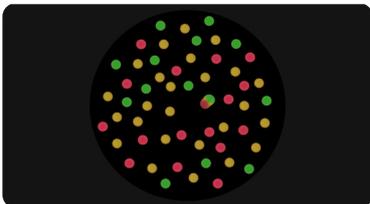
Overlapping spot centers indicate dual analyte spot.



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



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



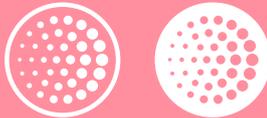
RAWspot technology: Scientific signal processing

*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?

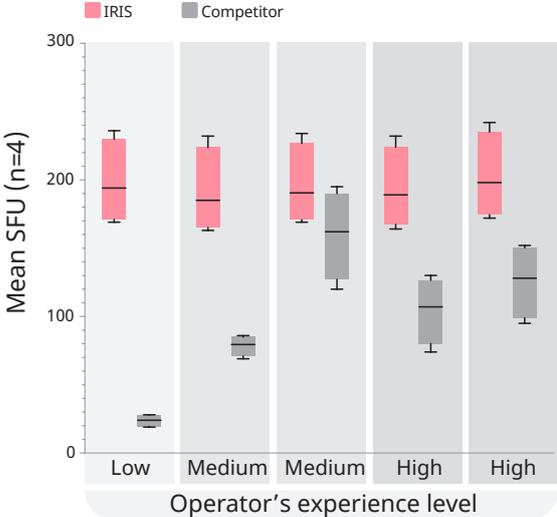
IRIS is our flagship, a FluoroSpot/ELISpot reader capable to analyze four analytes simultaneously with unparalleled accuracy and speed. ASTOR is our workhorse, an ELISpot-only reader built to be easy to use and durable.

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



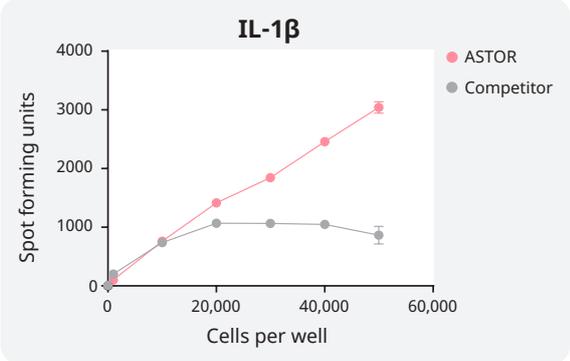
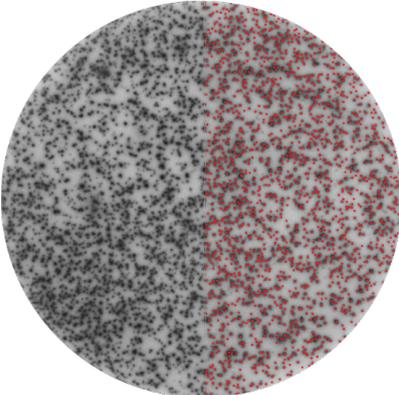
## Minimize subjective analysis

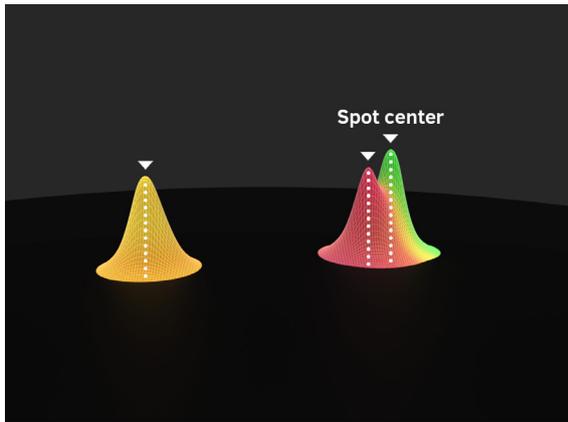
Automated reader configuration and default analysis settings minimize subjective input, reducing operator bias. Spot analysis has never been easier.



## Detect every spot

Our 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, no matter how small, big, faint, or distinct, is detected.





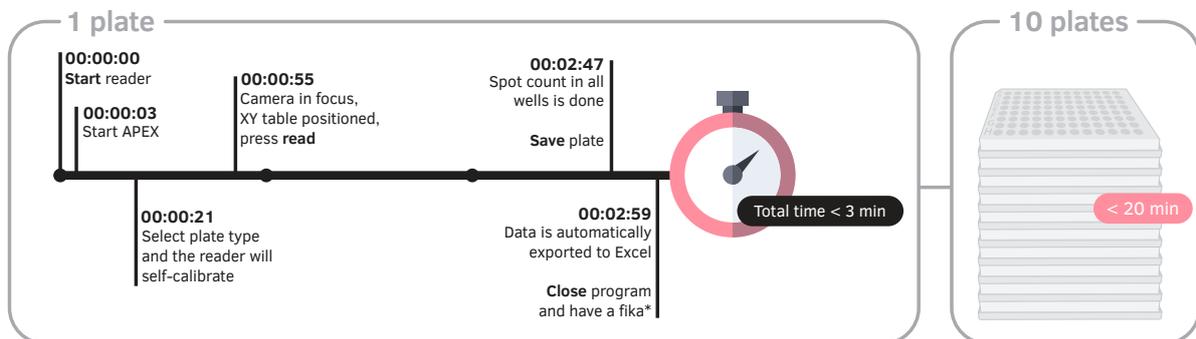
## Secretion profile of every cell

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

RAWspot technology's 3D model allows for a new type of data to be generated in FluoroSpot and ELISpot: **relative spot volume**. Now you can measure the relative amount of secreted analyte per cell.

## Quick data acquisition

An overlooked and time-consuming aspect of spot assays has been data analysis. With reliable data and unprecedented export capabilities, our readers reduce 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 reading the plate, you are free to change count settings, the experimental layout, and the look of well images, all without affecting the original data. The entire signal from each spot is already recorded, so adjustments can be done post-reading and you'll never have to re-read a plate.

# A new era of almost-too-easy



## Exact spot center

Accurate spot count and multiplexing



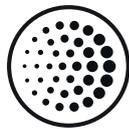
## New data dimension

Compare the amount of secreted analyte



## CFR21 part 11

Apex is ready-to-go



## ELISpot

Quick and sensitive results



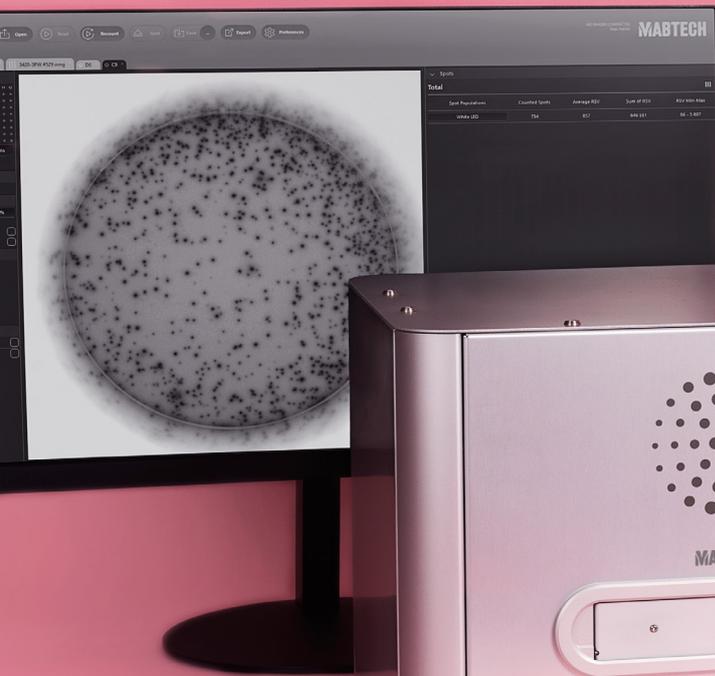
## FluoroSpot

4-color analysis



## Optimized settings

Pre-defined settings for plates and assays





### Scientific output

Export to Excel or GraphPad Prism



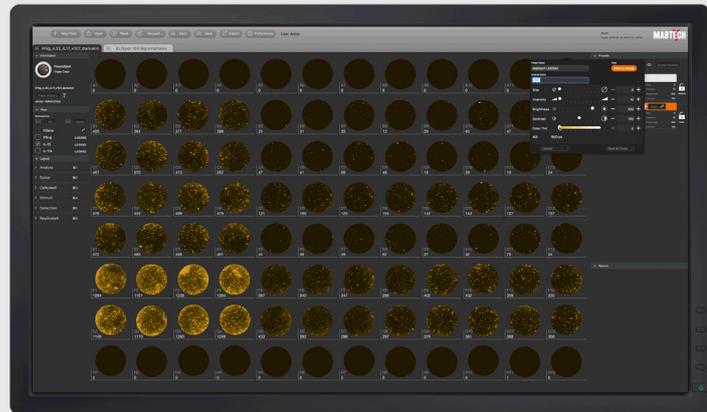
### Plug-and-play

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 Mabtech Apex™ software that has been designed to meet these requirements, 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:

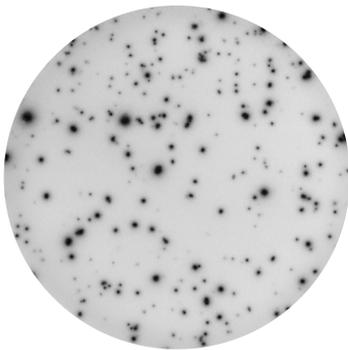
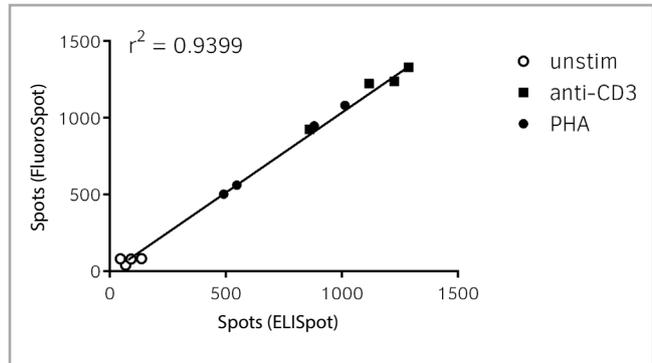
- Well images are processed as image RAW files, containing the untouched signal straight from the sensor. From the moment of capture, **RAW files are never compromised** by the software. As a result, the original data is maintained and cannot be concealed by any user, including the administrator.
- Files 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

As ELISpot and FluoroSpot assays capture analyte immediately after secretion and during the entire stimulation period, it's widely considered one of the most sensitive cellular assays available. Because of the high sensitivity of these assays, they are particularly useful for studying small cell populations that arise during specific immune responses.



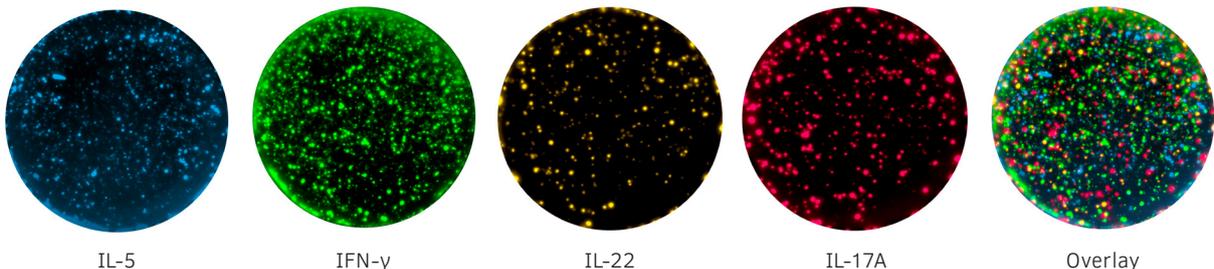
## Relevant secretion

In contrast to measurements skewed by receptor binding or protease degradation, the immediate capture of analytes 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.

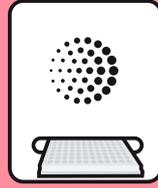
These images show a 4-color FluoroSpot analysis of IL-5, IFN- $\gamma$ , IL-22, and IL-17A secretion by human PBMCs: Four individual images from the same well and an image overlay, combining images from the four filters.



## That's the Mabtech way

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

Nevertheless, if you do have questions, our team is here to provide technical support. 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 innovative software and optimized hardware. Each reader is built, calibrated, and validated at Mabtech's headquarters in Sweden, and shipped to users around the globe.



	<b>ASTOR</b> <i>Anyone can play</i>	<b>Recommended</b> <b>IRIS</b> <i>Spot analysis reinvented</i>
<b>Applications</b>		
ELISpot	√	√
FluoroSpot	-	Up to 4-color
<b>Hardware</b>		
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
<b>Software</b>		
Mabtech Apex™	√	√
RAWspot technology	√	√
Export formats: .raw .jpg .xlsx .pzfx	√	√
Reading speed ELISpot	<2 min per plate	<2 min per plate
Reading speed FluoroSpot	N/A	5-13 min per plate
<b>Service</b>		
Warranty: 1-year, with the option to prolong the contract	√	√
IQ OQ	√	√
<b>Regulations</b>		
Compliance with CE, RoHS, REACH, WEEE, FCC, ICES, CFR21 part 11	√	√

# Check out our readers

For more information on our readers and other products, visit our website! Reader-related documents, publications, and highlighted research summaries are continuously updated. Get the full picture by visiting [www.mabtech.com](http://www.mabtech.com) or scanning 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 Neuroimmunol. 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 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 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.