

# Readers

## Spot analysis reinvented

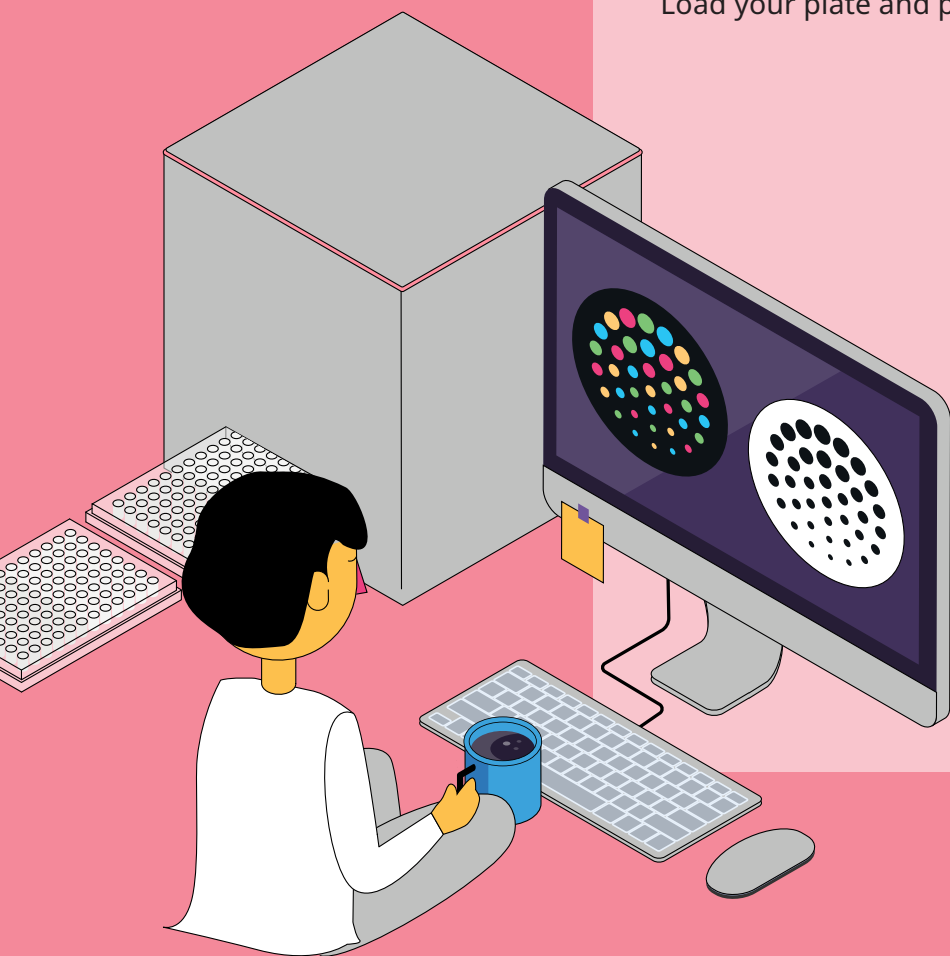
Game-changing readers for FluoroSpot, ELISpot, and FociSpot

## Minimized variability

Automated settings ensure unbiased analysis

## Anyone can play

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



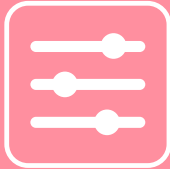
**MABTECH**



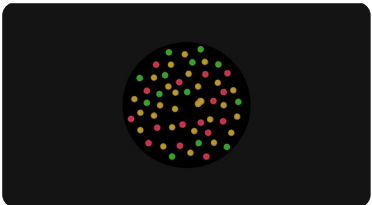
# How do our readers work?

To make plate reading and spot analysis effortless and reliable, we developed the **Mabtech IRIS™ 2** and **Mabtech ASTOR™ 2**. Mabtech IRIS 2 supports FluoroSpot, ELISpot, and FociSpot analysis, while Mabtech ASTOR 2 is our ELISpot-only reader.

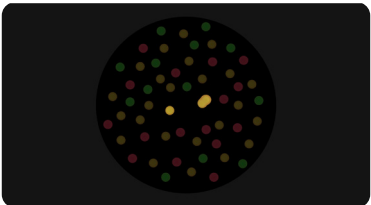
Our readers offer a revolutionary approach to spot analysis. Simply select the assay, load the plate, and press read. Our patented RAWspot™ algorithm ensures highly accurate spot center detection and counting. The software Mabtech Apex™ provides a **plug-and-play** system that is incredibly user-friendly. With IRIS 2 and ASTOR 2, users can enjoy an effortless and accurate spot analysis.



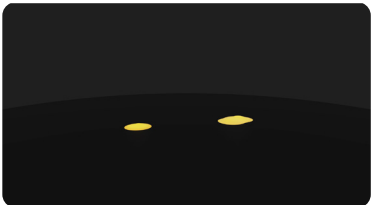
## Precise spot center detection for accurate analysis



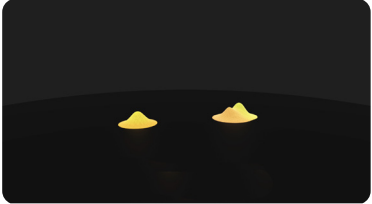
In FluoroSpot, it's crucial to distinguish single from dual analyte spots.



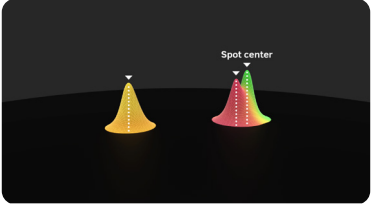
Competitor readers use image analysis where single analyte spots can be mistaken for dual.



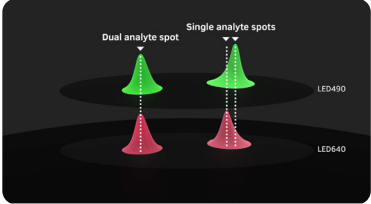
A standard 8-bit image is relatively flat.



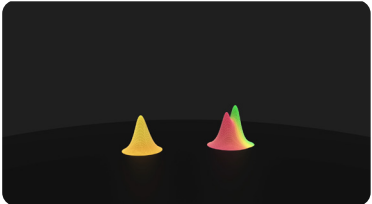
RAWspot uses the **wide dynamic range** of the image's RAW signal.



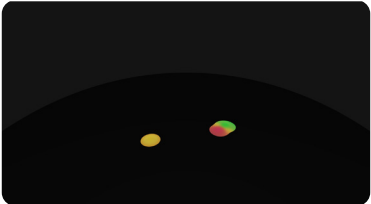
RAWspot finds **the spot center**.



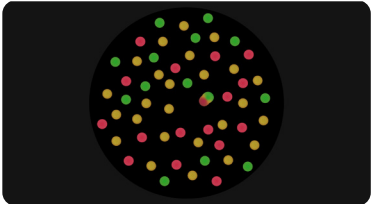
Overlapping spot centers indicate a dual analyte spot.



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



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



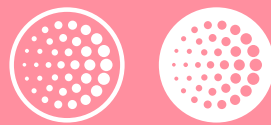
RAWspot technology: Scientific signal processing

*The development of the patented RAWspot™ technology has resulted in several scientific publications in peer-reviewed journals.*

# What are the benefits?

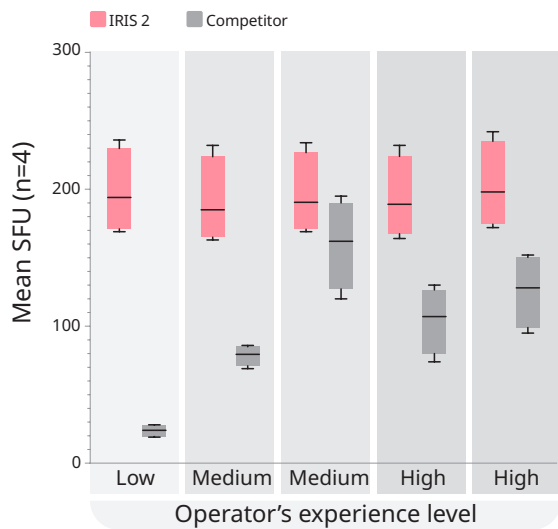
IRIS 2 is our premier reader for FluoroSpot, ELISpot, and FociSpot analysis. The reader can detect up to four analytes simultaneously with unparalleled accuracy and speed. ASTOR 2 is our workhorse, an ELISpot-only reader built to be fast and easy to use.

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.



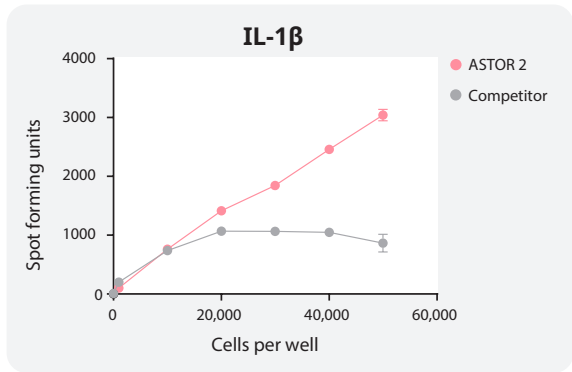
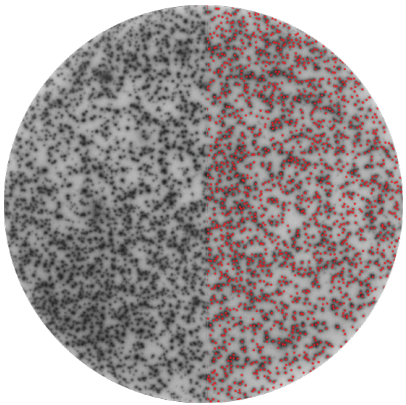
## Minimize subjective analysis

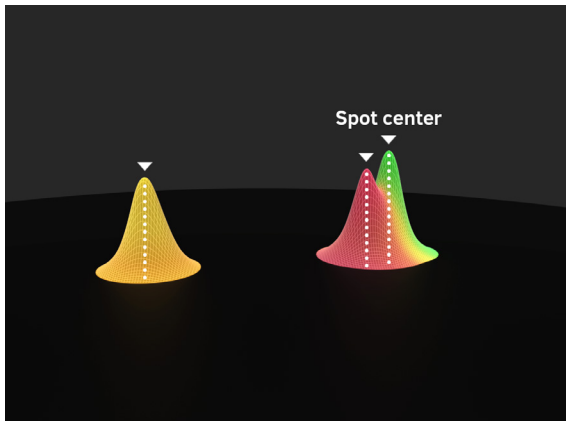
Automated reader configurations and default analysis settings minimize subjective input, reducing operator bias. Spot analysis has never been easier.



## Detect every spot

Our readers identify distinct spots in a linear fashion without hitting a plateau. Based on signal processing, the algorithm provides objective results for immediate analysis. Every spot, no matter how small, big, faint, or distinct, is detected.





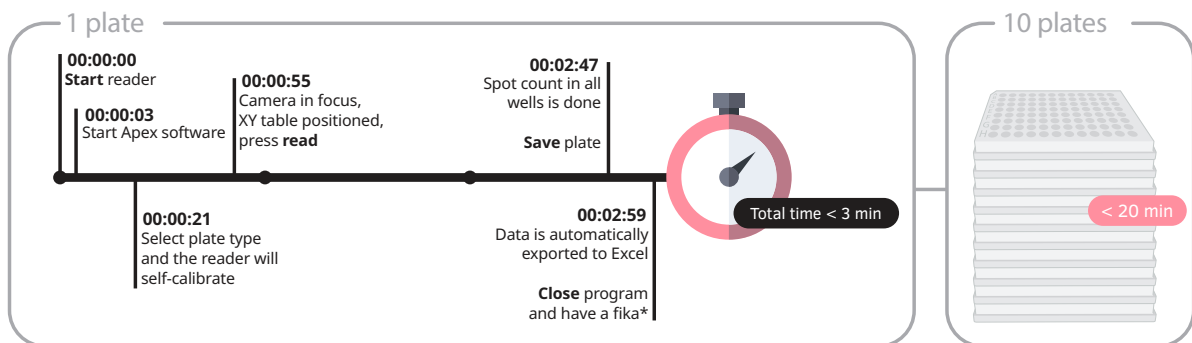
## Secretory profile of every cell

Our RAWspot technology depicts the secretory 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, a plug-and-play experience, and unprecedented export capabilities (Excel and GraphPad Prism), our readers reduce the time from data acquisition to final analysis, 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

## Ready for automation

Both readers are designed to make the analysis of larger projects as painless as possible. In addition to self-calibration, responsive software, and easy data handling, IRIS 2 and ASTOR 2 allow for robotic plate loading. Our readers can be part of an automated workflow with a robotic arm or be fully integrated into a larger automated setup. Each automation solution is unique, but we'll be here for you every step of the way.



## Regulatory compliance

The EU and the US (FDA) have established guidelines for the life sciences industry, known as Annex 11 and CFR21 part 11, respectively. These guidelines outline the use of computerized systems in clinical investigations and specify that the quality of source data obtained through these systems must match that of traditional paper records.

Our software has been designed to comply with the following guidelines in § 11.10 Controls for closed system of CFR21 :

- Validation – Part 11.10 (a)
- Copies – Part 11.10 (b)
- Record protection – Part 11.10 (c)
- Access limitation, operational system checks and authority checks – Part 11.10 (d, f, g).
- Audit trails – Part 11.10 (e)
- Device checks (h)

## Benefits at a glance



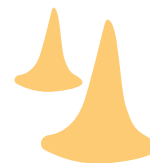
### Exact spot center

Accurate spot count and multiplexing



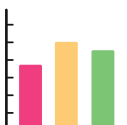
### Optimized settings

Pre-defined settings for plates and assays



### New data dimension

Compare the amount of secreted analyte



### Scientific output

Export to Excel or GraphPad Prism



### Plug-and-play

Insert plate, press read, and export



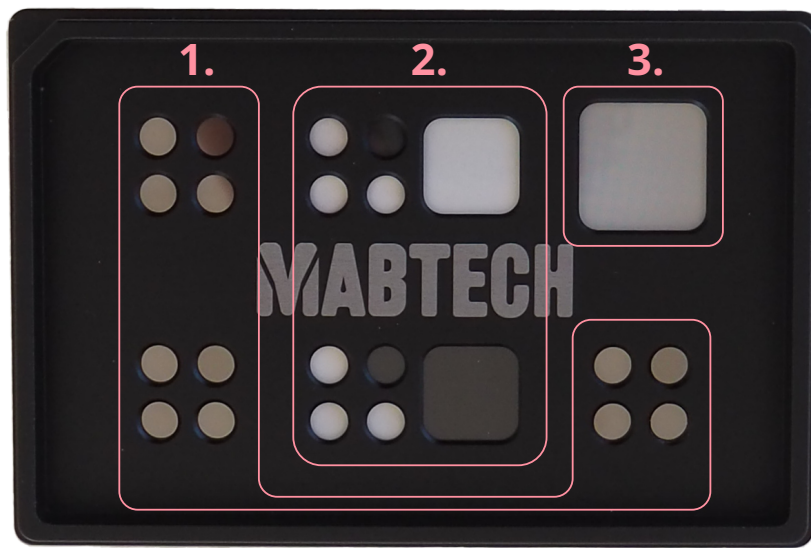
### CFR21 part 11

Apex is ready-to-go

## Performance qualification

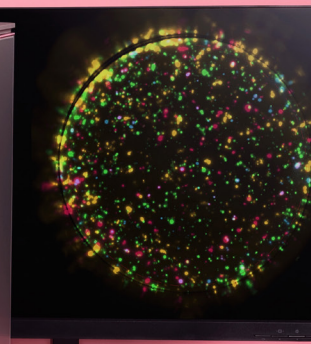
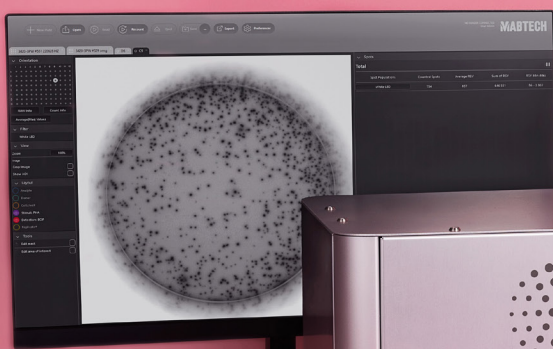
Our readers are reliable tools that can be trusted to deliver accurate results over an extended period of use. However, it's essential to demonstrate that the readers maintain acceptable performance over time, especially when facing internal or external review for regulatory compliance. Mabtech's Performance Qualification (PQ) plates provide a solution for verifying that

our instruments fulfill quality specifications and to ensure reproducibility. The PQ plates allow users to conduct a series of quantitative and qualitative tests making it easy to identify any incorrect or inconsistent operation of the reader. By using PQ plates, our instruments can be confidently validated providing peace of mind knowing that experiments are accurate and reliable.



*Different sections of a PQ-plate:*

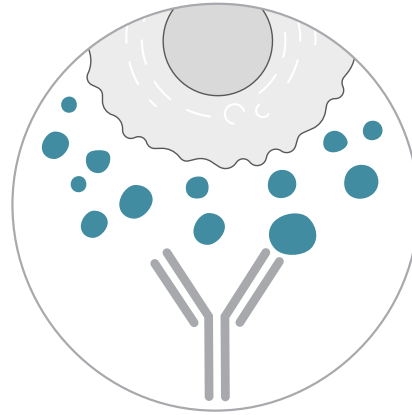
- 1. Tests focus and RAWspot algorithm in FluoroSpot mode*
- 2. Tests light intensity of LEDs used in FluoroSpot.*
- 3. Tests focus, RAWspot algorithm, and light intensity in ELISpot mode.*



# Why spot analysis?

## Sensitive detection with ELISpot and FluoroSpot

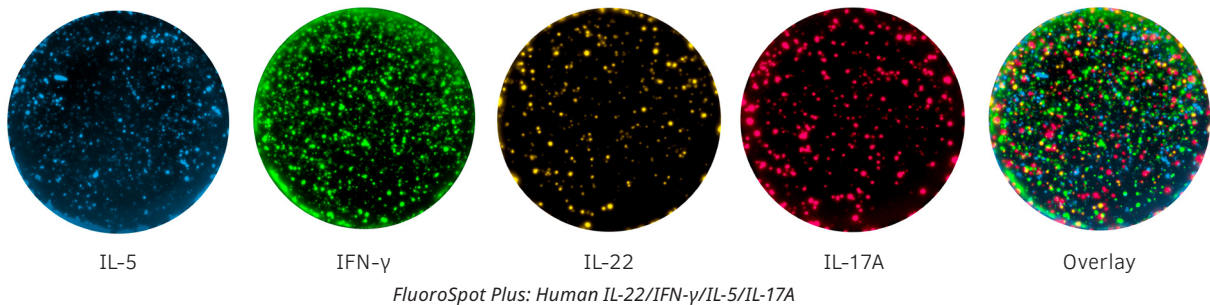
In ELISpot and FluoroSpot, the analytes of interest are captured directly upon secretion and throughout the stimulation process. This enables the analysis of physiologically relevant secretion. It's also why these assays are considered extremely sensitive cellular assays. And high sensitivity means that ELISpot and FluoroSpot are particularly useful for studying rare cell populations that arise during specific immune responses.



*Analysis of physiologically relevant secretion*

## Study up to four analytes with FluoroSpot

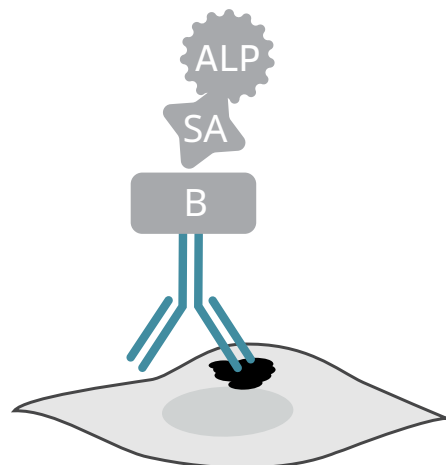
FluoroSpot allows for the simultaneous detection of cells secreting multiple analytes such as cytokines or immunoglobulins by separate fluorescent signals. This makes the assay ideal for identifying functional subpopulations of cells.



## Count foci with FociSpot

FociSpot is our new assay platform that includes both kits and a new analysis capability of Mabtech IRIS 2, allowing for automated counting of foci in a 96-well plate format. In FociSpot, foci are detected with immunostaining using virus-specific mAbs and a precipitating substrate reaction similar to ELISpot.

Focus forming assays (FFAs) can have a variety of different setups such as focus-forming neutralization tests (FRNT) or Tissue Culture Infectious Dose (TCID50) assays. FRNT and TCID50 can be used to quantify viral titers or virus-specific antibody neutralization titers and are commonly used in vaccine and infection research. FFA, FRNT, and TCID50 can all be analyzed with the FociSpot platform.



*FociSpot enables analysis of virus-infected cells*



# Support you can rely on

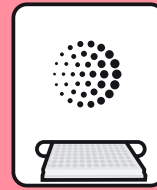
## That's the Mabtech way

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.

## Service packages

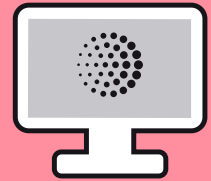
In addition to the included warranty, our instruments can be complemented with additional service packages to suit your specific needs. Get in touch with us or your local distributor for more details.



Workshop



Consulting



Demo  
(onsite/online)



# Which reader to choose?

Mabtech IRIS 2 and Mabtech ASTOR 2 are based on the same intuitive software and plug-and-play hardware. Each reader is built, calibrated, and validated at Mabtech's headquarters in Sweden.



|  | <b>ASTOR 2</b><br><i>Anyone can play</i> | <b>Recommended</b><br><b>IRIS 2</b><br><i>Spot analysis reinvented</i>      |
|--|--|---|
| <b>Applications</b>  |  |   |
| ELISpot  | √  | √   |
| FluoroSpot   | -  | Up to 4-color   |
| FociSpot   | -  | √   |
| <b>Hardware</b>  |  |   |
| Self-calibrating XY-table  | √  | √   |
| Light source: LED(s)   | ELISpot: White LED ring light            | FluoroSpot: LED380, LED490, LED550, LED640<br>ELISpot: White LED ring light |
| CMOS sensor with global shutter  | Macro                                    | Telecentric   |
| Plate types: 96-well   | ELISpot: MSIP, MAIPSWU                   | ELISpot: MSIP, MAIPSWU<br>FluoroSpot: IPFL<br>FociSpot: Corning, Nunc       |
| Dimensions (H x W x D)   | 315 x 430 x 480 mm                       | 505 x 430 x 480 mm  |
| Desktop PC (included)  | √  | √   |
| Robotic automation ready   | √  | √   |
| <b>Software</b>  |  |   |
| Mabtech Apex™  | √  | √   |
| RAWspot™ technology  | √  | √   |
| Export formats: .raw .jpg .xlsx .pzfx .tiff                                  | √  | √   |
| Reading speed ELISpot  | <2 min per plate                         | <2 min per plate  |
| Reading speed FluoroSpot   | N/A                                      | 5-13 min per plate  |
| Reading speed FociSpot   | N/A                                      | <2 min per plate  |
| <b>Service</b>   |  |   |
| Warranty: 1 year, option to prolong  | √  | √   |
| Qualification: IQ, OQ, PQ  | √  | √   |
| <b>Regulations</b>   |  |   |
| Compliance with CE, RoHS, REACH, WEEE, FCC, ICES, CFR21 part 11, EU Annex 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 founded in 1986. Our mission is to aid scientists to reach new frontiers through optimal immunoassays and instruments.

[www.mabtech.com](http://www.mabtech.com)