From Complexity to Clarity

ZEISS Axioscan 7 spatial biology

Enabling Easy, Reproducible Multiplex Spatial Profiling at Scale

zeiss.com

Seeing beyond

From Complexity...

The challenges to transition spatial biology from Basic to Clinical research

Spatial biology allows for the comprehensive analysis of cell presence, abundance, and spatial organization within their native tissue microenvironment. As the field rapidly transitions from discovery to translational and clinical applications, challenges with scalability such as low throughput, efficiency and reproducibility issues continue to hinder widespread adoption of spatial biology as a routine mainstream application. Despite its immense potential, many labs struggle to integrate spatial biology into their standard routine workflows.

Limited Throughput Per Instrument

- Physical slide capacity of the instruments are low and limited
- Significant setup time reduces overall efficiency
- Teams must either hire more staff or turn down projects to keep up with demand

Challenges in Diverse Assays Compatibility

Achieving high-quality measurements across diverse assays (BF, mIF, FISH, etc.) in a single run or on one platform remains difficult

Complicated mIF staining and imaging protocols

Highly complex staining protocols and instruments require detailed SOPs to maintain consistency, adding to operational burden

Inter-device, inter-day, inter-operator inconsistencies

Variability between different runs and instruments impacts data reliability and reproducibility

Manual Setup and Documentation Due to Lack of LIMS Integration

Scan setup and results must be manually recorded, increasing the risk of errors and requiring more technician time

Complex, Time-consuming and Costly Data Analysis

Developing and validating robust data analysis pipelines is resource-intensive, time-consuming, and expensive

Challenges with scaling High-Plex Staining Approaches

Novel high-plex staining techniques are promising but are not scalable in practice, limiting their adoption

...To Clarity.

Fast and high-throughput Imaging & Analysis

1-Click to effortlessly scan and analyze 100+ slides per day

With our ZEISS spatial biology offering, we simplify high-throughput multiplex IF imaging and analysis, making it robust, scalable, and accessible. Our seamless **tissue multiplexing workflow** aims to empower routine histopathology labs, including those with no prior spatial biology expertise, to generate comprehensive, reproducible biomarker data across large sample cohorts.

By combining automation, optimized imaging, and AI-powered analysis, we pave the way for the translational adoption of spatial proteomics and the transition to clinical practice.

One Streamlined Workflow

Sample

Report

1-Click to Start and walk away

SlideStream Streamlines your workflow

Broad compatibility. High throughput.

Our workflow automation allows reading a vast variety of barcode formats used in autostainers and is compatible with a broad range of multiplex immunofluorescence (mIF) and chromogenic reagents and assays. Scan over 100 mIF and brightfield slides per day without manual intervention.

Automated Workflow

- **Sample preparation**
  Compatible assays and reagents
- **Axioscan 7 spatial biology**
  Automated HDR imaging
- **SlideStream**
  Workflow Manager Software
- **Mindpeak**
  AI-powered image analysis

Axioscan 7 spatial biology

Slidestream

Sample preparation

Mindpeak

Compatibility with a broad range of reagents chemistries and assays

- One instrument to scan mIF and IHC stained samples
- Streamlined End-to-End workflow, from sample to report, eliminates the need for specialized technical expertise

Rapid whole-slide imaging of over 100 slides per day for high-throughput processing

- Walk-away automation ensures seamless operation, with the scanner automatically initiating slide analysis after scanning
- Physical capacity of 100 slides per run

Seamlessly scan and analyze 8-plex images on a single slide

- Examine cell-cell spatial relationships within the tumor microenvironment and evaluate expression across multiple ADC targets

Effortless Alignment for Cyclic Imaging Assays

- Integrated software solution eliminates need to use third party sources

Advanced automation

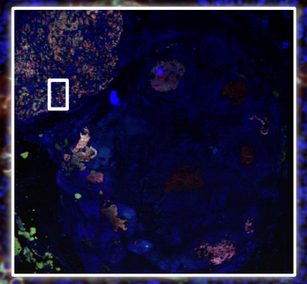
- Accelerate your work with AI-powered software features like never before
- Custom services for integration into LIMS

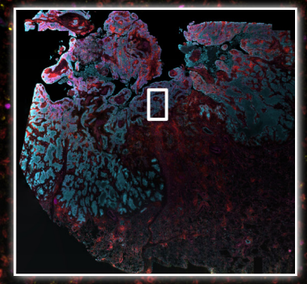
High reproducibility

- Achieved with smart combination of highly robust hardware and software components

Automated spatial mIF Results

- Robust, pre-trained AI analysis provides reproducible spatial mIF data independent of the operator





"The seamless integration of reagents, Axioscan 7, SlideStream, and Mindpeak analytics offers an incredibly user-friendly and fully automated workflow. It has transformed the way we generate spatial phenotypic data; fast, reproducible, and scalable for our clinical research."

Prof. Christoph Kuppe, MD, PhD,
University Clinic RWTH Aachen

A composite image of bladder cancer tissue

TROP2 HER2 NECT4 HER3 DAPI

The image shown on this page represents research content, courtesy of University Clinic Aachen. ZEISS explicitly excludes the possibility of making a diagnosis or recommending treatment for possibly affected patients on the basis of the information generated with an Axioscan 7 slide scanner.

"A key bottleneck in any spatial biology project is whole-slide tissue scanning, which can lead to unplanned reviews and repeat imaging, making it difficult to predict delivery timelines and associated costs. ZEISS is addressing this challenge with an efficient and reproducible automated workflow that truly benefits CROs offering this service. I'm thrilled to be collaborating with ZEISS in advancing scanning technology and delivering superior outcomes for our clients."

Christopher Mills, Senior Scientist
Concept Life Sciences (CRO in United Kingdom)

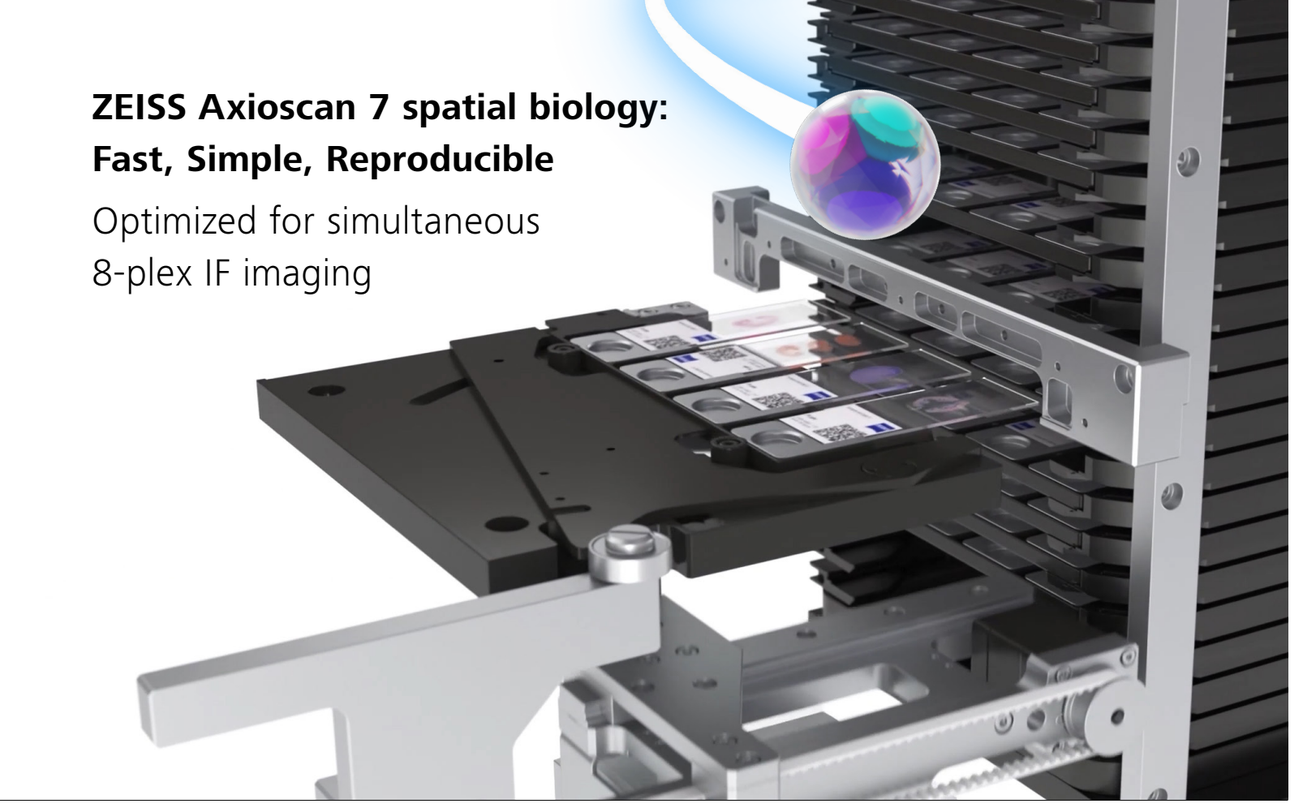
A composite image of Non-Small Cell Lung Cancer tissue

Ki67 GranzymeB CD3 CK/SOX10

The image shown on this page represents research content, courtesy of Concept Life Sciences. ZEISS explicitly excludes the possibility of making a diagnosis or recommending treatment for possibly affected patients on the basis of the information generated with an Axioscan 7 slide scanner.

ZEISS Axioscan 7 spatial biology: Fast, Simple, Reproducible

Optimized for simultaneous 8-plex IF imaging



In today's fast-paced research environments, CROs, pharmaceutical industry, and high-throughput imaging labs demand faster, more reliable and reproducible, and automated solutions for spatial biology.

The Axioscan 7 spatial biology configuration is designed to address these needs, delivering exceptional speed, sensitivity, and workflow integration optimized for 8-plex multiplex immunofluorescence (mIF) imaging.

Fast multiplexing imaging

Seamlessly scan up to 8-plex images with superior speed: 10 mm2 tissue area can be scanned in 3 to ~10 minutes for 5- or 8-Plex respectively.

Superior Sensitivity

Reveal fine subcellular details with 170 nm pixel size (high-resolution mode) or 345 nm (high-sensitivity mode). Advanced optics and a high-performance camera deliver exceptional clarity in multiplexed samples.

Advanced HDR Imaging

Capture the full dynamic range from the dimmest to the brightest signals and stop wasting time to find multiple optimized exposure time settings to address staining intensity variability in your samples.

Advanced automation

Accelerate your work with enhanced barcode recognition, AI-driven mIF tissue detection, and pre-defined scan profiles optimized for robust mIF and H&E imaging.

Best-in-class reproducibility

The combination of highly robust light output of the new Viluma LED light source and an improved shading correction provides optimal image quality for tiled imaging and highly reproducible image intensities across devices.

Efficiency and workflow integration

Optional software bundle (SlideStream and Mindpeak) support routine users with a highly automated and streamlined pipeline for image acquisition and image analysis and the possibility of custom integration into LIMS systems.

Effortless Alignment for Cyclic Imaging Assays

Integrated co-registration feature ensures seamless, precise alignment of images across multiple imaging rounds, enhancing reproducibility and data integrity.

Custom Services

System upgrades and customization

Complimentary LIMS integration and lab automation

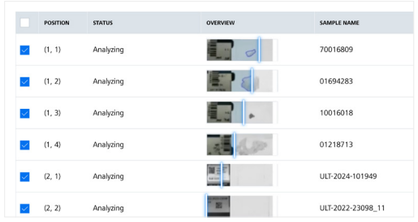
Custom AI analysis development and deployment

Introducing SlideStream Workflow Manager

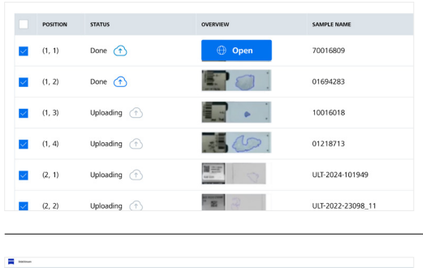
Fast, Scalable, and Effortless Multiplex IF Imaging and Data Analysis

3 Main Steps to get from Sample to Report
Efficiency, Reproducibility, Ease-of-Use

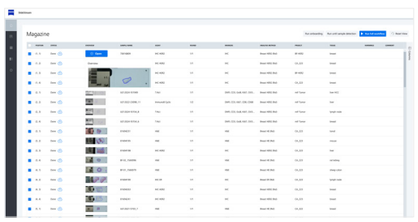
1 **Load batch of slides** — 2 **Start scan** — 3 **Start analysis**



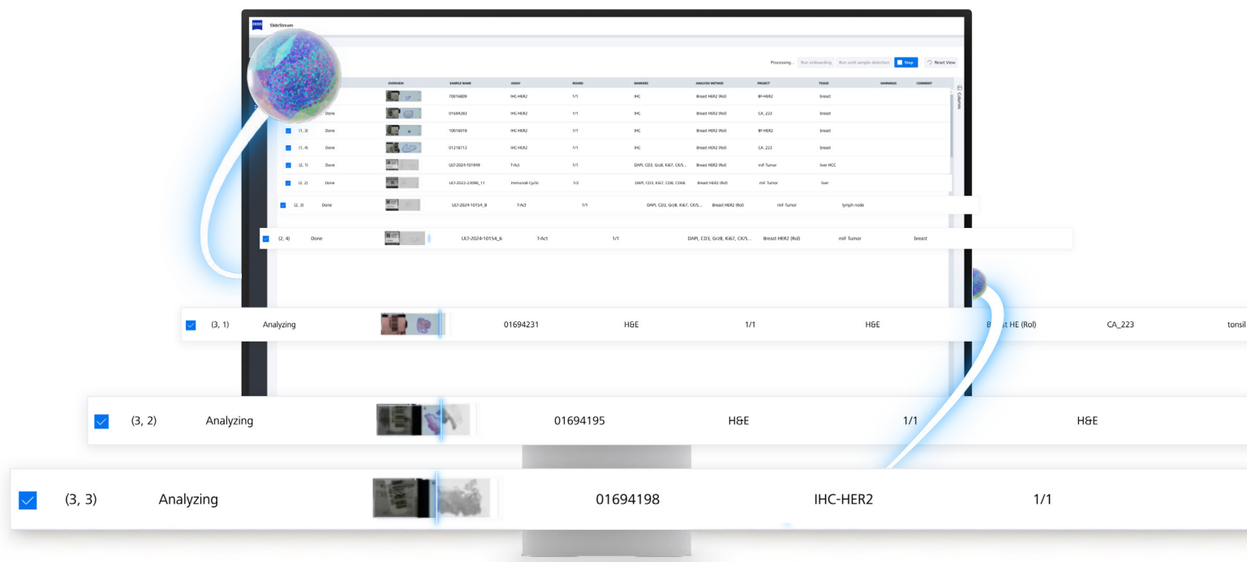
Autoselect scan and analysis
Barcodes on slides are used to retrieve slide information from the integrated sample data base and automatically select the appropriate pre-optimized scan and analysis routine.



Automated image upload
Fully automated image upload and analysis trigger without any manual intervention

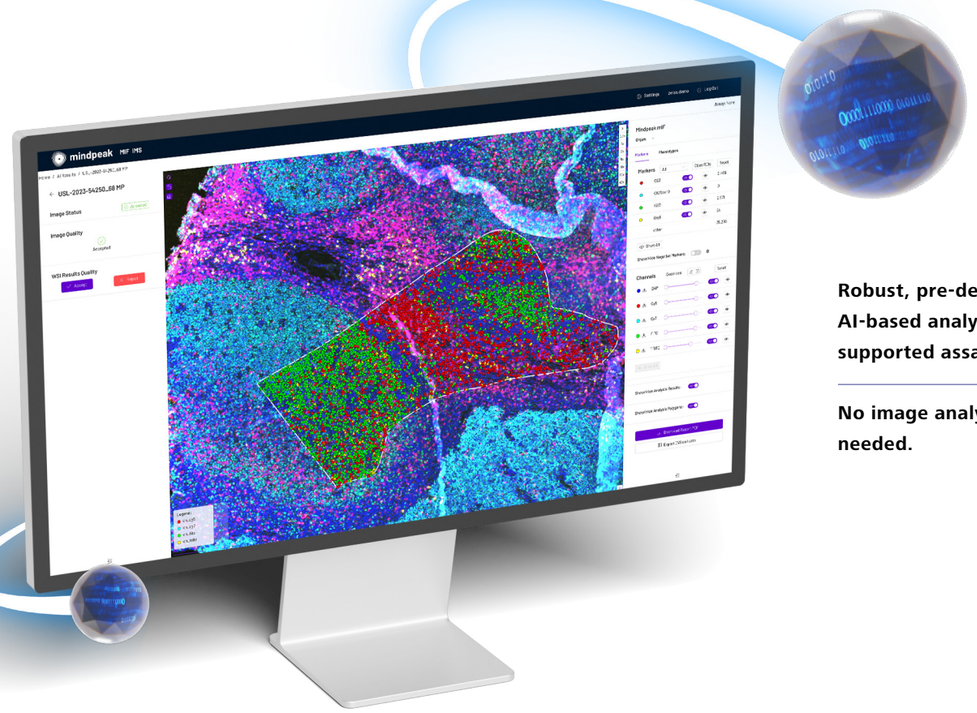


Integration services
Services for custom workflow automation, such as integration of Laboratory Information Management System (LIMS) and Image Management System (IMS) for smooth workflow optimization and data management, and many more adaptations.



AI-powered 1-click automated mIF image analysis

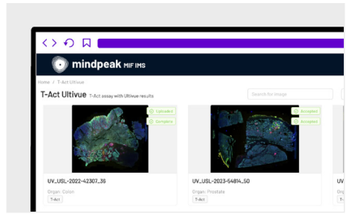
Image In, Report Out



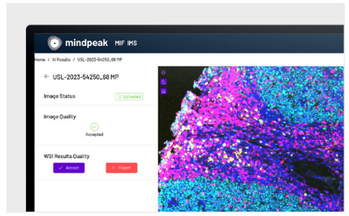
Robust, pre-developed AI-based analysis for supported assays.

No image analysis skills needed.

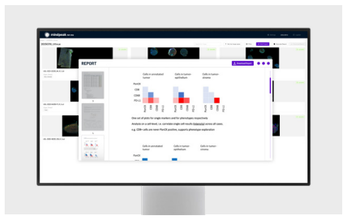
Easy and Intuitive to Use



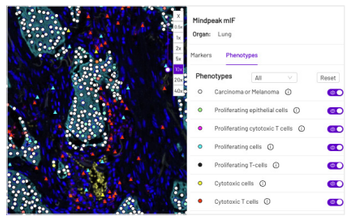
Browser Access to images and analysis - anywhere, anytime



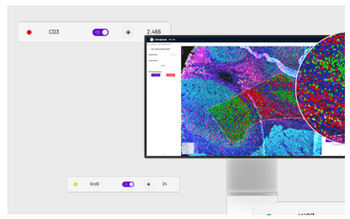
Review image and analysis quality and document QC results



Ready to download report



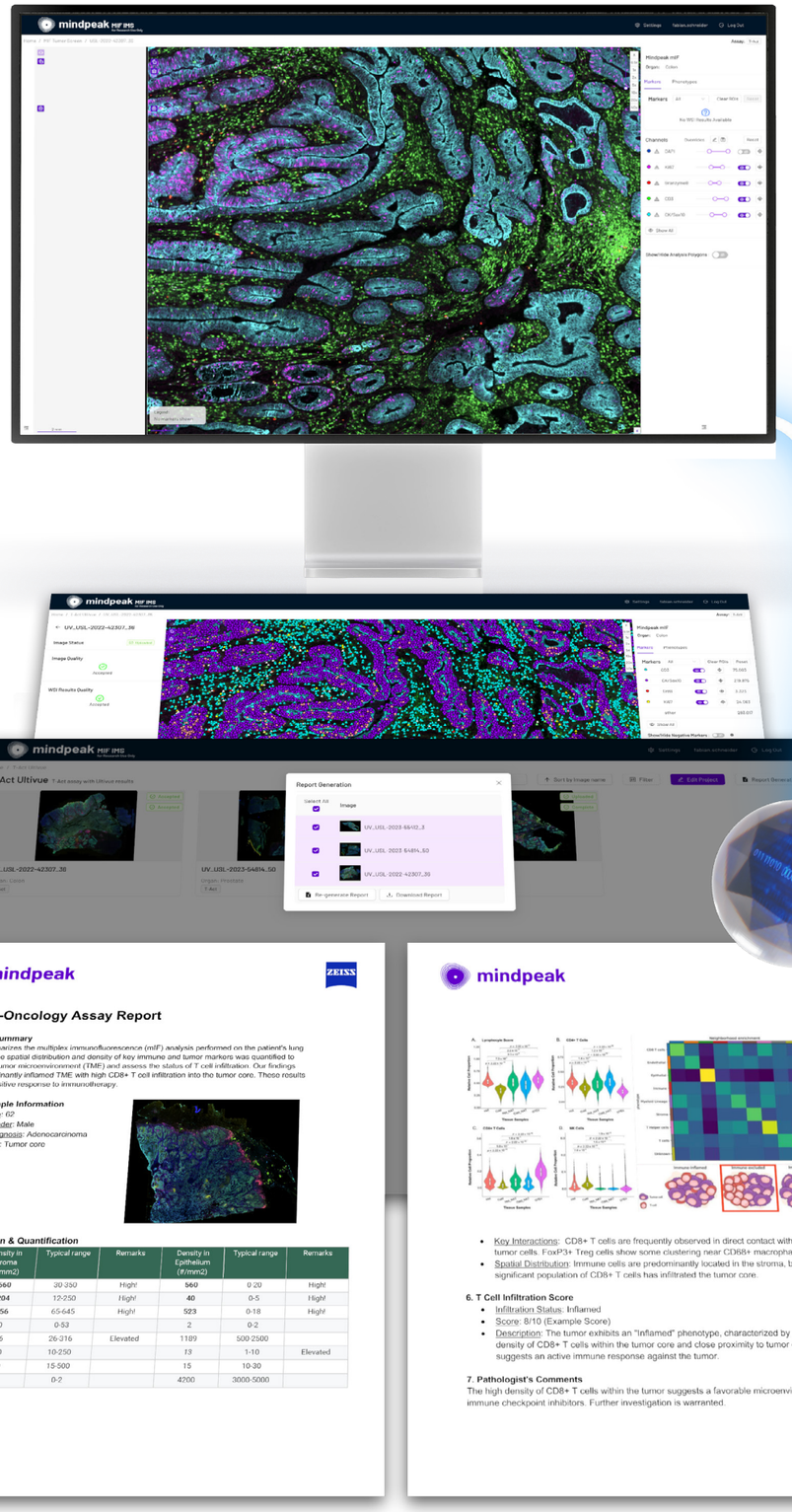
Standardized reports with User defined Phenotypes

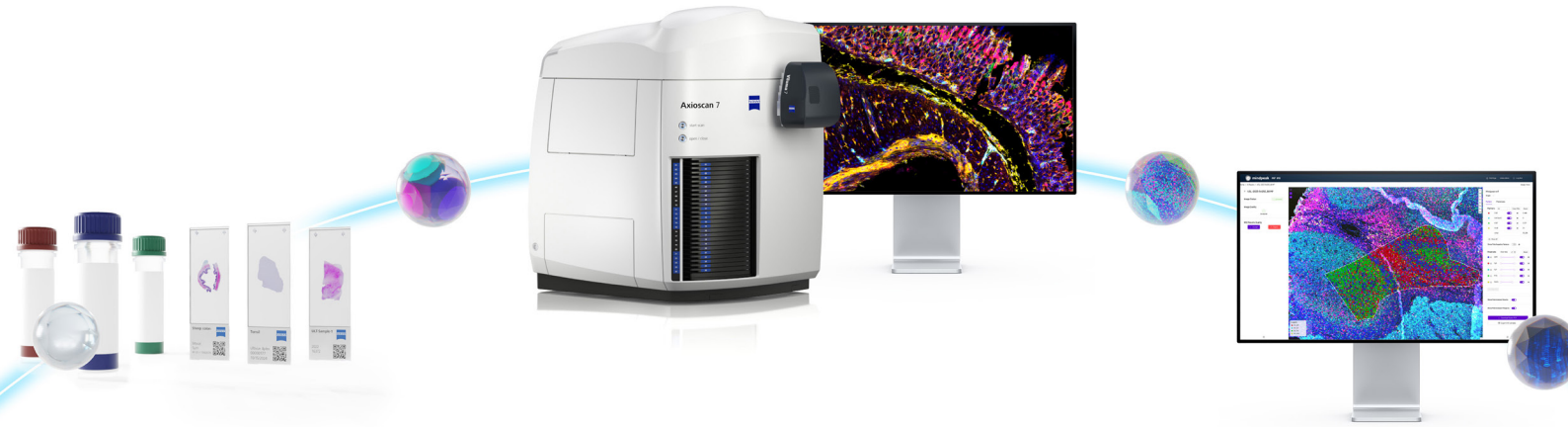


Custom AI algorithm development services up to IVD certified use cases possible

Mindpeak AI-based analysis

Automated image annotation and report generation





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