

**ASI** APPLIED  
SPECTRAL  
IMAGING  
a **ZYTOXICS**® company

**DIGITAL  
CYTOGENETICS**

**EVERY  
DIAGNOSIS  
COUNTS**

## Company Overview

Applied Spectral Imaging (ASI) is a Global Leader in biomedical imaging solutions for **Pathology, Cytogenetics, and Life Sciences**.

Since 1993, ASI has delivered cutting-edge imaging platforms that streamline the diagnostic workflow - from image acquisition to quantitative analysis, reporting, and LIS integration. With more than 5,000 systems installed in over 80 countries, ASI's technology drives diagnostic accuracy and laboratory efficiency through advanced applications in **karyotyping, FISH, digital pathology, IHC, IF and spectral imaging**.

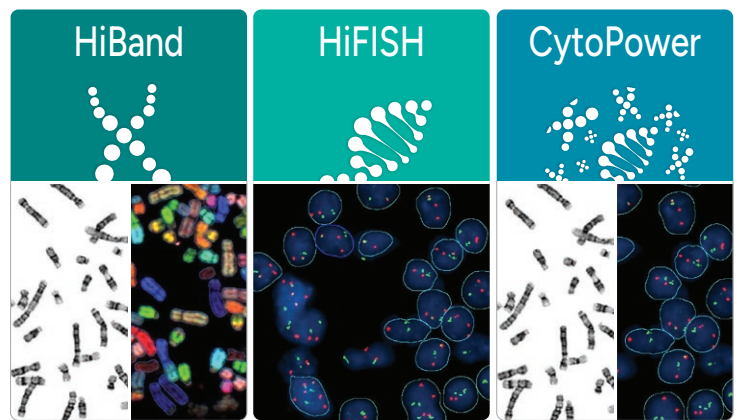
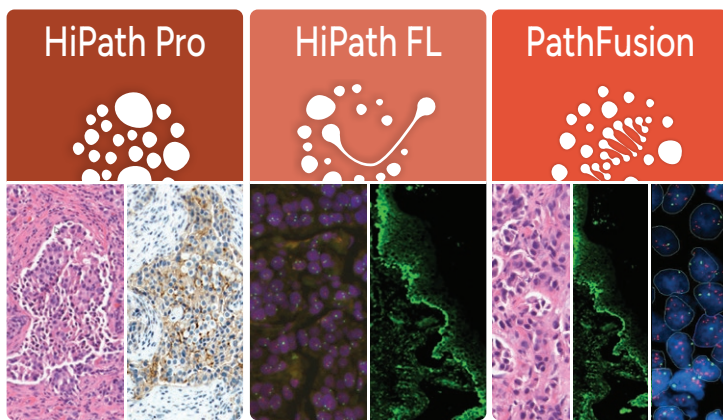
Now part of **ZYTOMICS**, a leader in cancer diagnostics, ASI integrates its pioneering imaging capabilities with ZYTOMICS' extensive portfolio of pathology reagents and automation. Both probe-agnostic and scanner-agnostic, ASI's platform provides the flexibility labs need to apply their preferred protocols with confidence.

ASI's portfolio includes **FDA-cleared and IVDR-compliant products** such as BandView, FISHView, SpotScan for CEP XY, UroVysion, ALK, and HER2/neu FISH, as well as the HiPath IHC Family for HER2, ER, PR, and Ki67.

Backed by a global distribution network and a reputation for outstanding support, ASI continues to set the standard in diagnostic imaging - committed to improving patient care with reliable, flexible, and future-ready solutions.

**Together, ZYTOMICS and ASI combine a broad reagent portfolio with advanced digital imaging - because Every Diagnosis Counts.**

## Product Portfolio

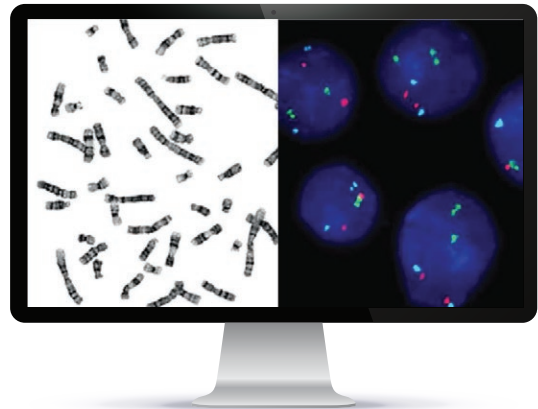


# Comprehensive Digital Karyotyping & FISH Solution

## Seamless Workflows with ASI's Digital Cytogenetics Platform

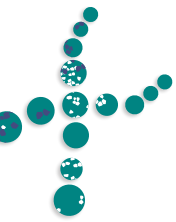
ASI's cytogenetics platform is a **versatile** imaging and analysis solution offering chromosome review and computer-aided karyotyping (**HiBand**), digital FISH analysis (**HiFISH**) or a combination of both (**CytoPower**). The platform also features **HiSKY**, ASI's renowned gold standard for spectral karyotyping (multi-color FISH analysis).

Supporting both **single and multiple readers'** workflows, the platform provides standardized and consistent results across multiple sample types, staining techniques, and vendor-agnostic probes. Adjustable to address laboratories' needs, the platform offers a range of **image acquisition solutions**, from 1-slide manual capture to 9-slide scanner and 99+ slide tray loader.



## Benefits to your lab

- ◆ **Versatile** platform **customizable** to your needs
- ◆ Statistical results & **semi-quantitative analysis**
- ◆ Secured database and **case data management**
- ◆ **Cybersecurity compliant** and future-ready IT system
- ◆ Connectivity with **Lab Information Systems**
- ◆ **HIPAA-compliant** remote access solution



# HiBand

HiBand offers a digital solution for cytogenetic laboratories, combining **high throughput scanning** with **computer-aided chromosome analysis and karyotyping**. Supporting metaphase review and approval while scanning, HiBand provides advanced functional tools for image analysis across a variety of staining types including **G-Band**, **Q-Band** and **R-Band**.

## Computer-Aided Karyotyping

Following metaphase identification by the **Smart Metaphase Finder**, ASI's computer-aided karyotyping **generates suggested karyograms during image capture**. Integrated into HiBand, the aided-karyotyping workflow is applicable to all sample types and can be used on both manual and scanning platforms. Available for review and approval while scanning, karyotyped metaphases require **minimal number of manual adjustments**.

## Scanner-Agnostic Karyotyping

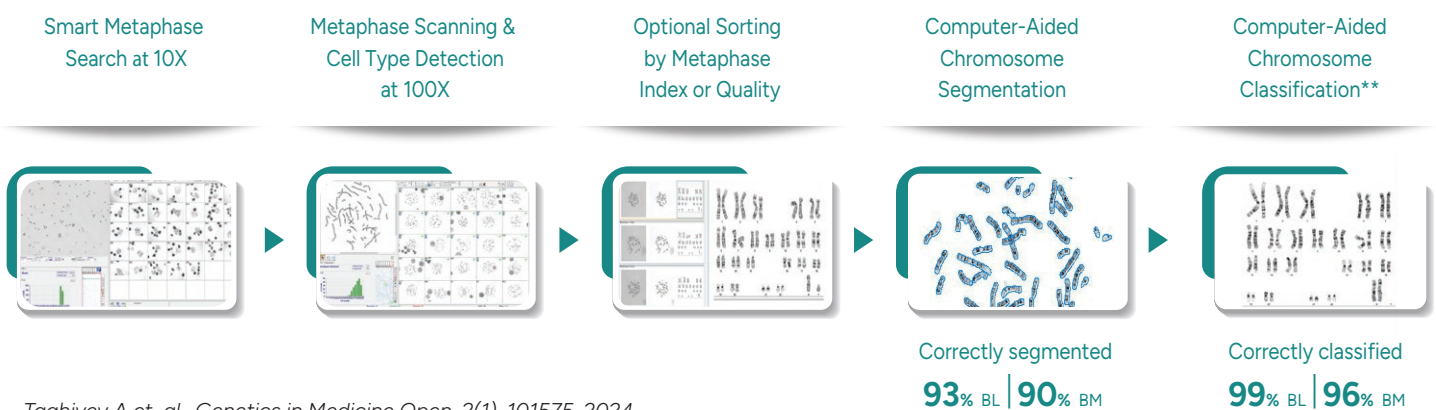
With **ScanLink Cyto** within HiBand, computer-aided chromosome analysis and karyotyping are also available **on images acquired on third-party scanners\***.



## Benefits to your lab

- ◆ **Suggested karyograms** immediately available for review while scanning
- ◆ **Smart Metaphase Finder** maximizing detection of metaphases
- ◆ **Scanner-agnostic karyotyping** on third-party metaphase images

## Digital Karyotyping: Boosting Lab Productivity



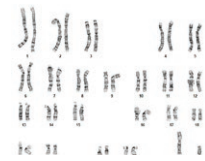
Taghiyev A et al. *Genetics in Medicine Open*, 2(1), 101575, 2024

\* Please ask your ASI representative for more details. Note that ScanLink Cyto is not cleared for IVD clinical use.

\*\* Following manual adjustments to correct automatic segmentation

"AI-based karyotyping method **reduces by approximately half** the time spent to correct and analyze each karyogram." "This enhanced efficiency is poised to significantly contribute to **expediting turnaround times for the preparation of karyograms in cytogenetic labs**, freeing precious time for higher-value tasks."

Burnside RD et al. *Genetics in Medicine Open* 3(1), 101918, 2025



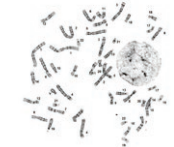
### Karyotype

Computer-aided karyotyping, with ISCN, band estimation and overlap score



### Count

Chromosome counting



### Analyze

Chromosome indexing and classification

## Easy Separation & Boundary Editing

ASI's "Magic Tool" combines 12 operations in a simple mouse click



Saves hundreds of mouse-clicks per karyotype!



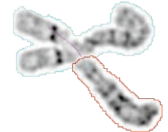
Overlap



Split

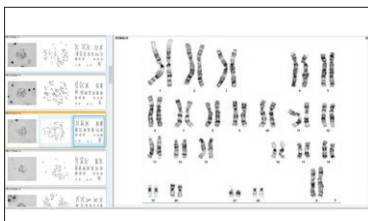


Extend



Combine

## Advanced Onscreen Review



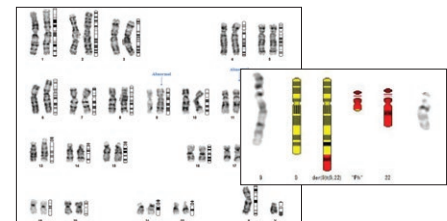
### Image Gallery

Display all case metaphases and karyotypes



### Chromosome Compare

Display all captured cells and chromosomes side-by-side



### Aberrant Ideogram

Generate chromosomes, cells, ideograms and annotations in an image generator

## Reference Atlas for Higher Assurance

Internet toolbar with selection of **predefined genetic websites**, provides the expert support needed to investigate, research, and confirm challenging abnormalities.

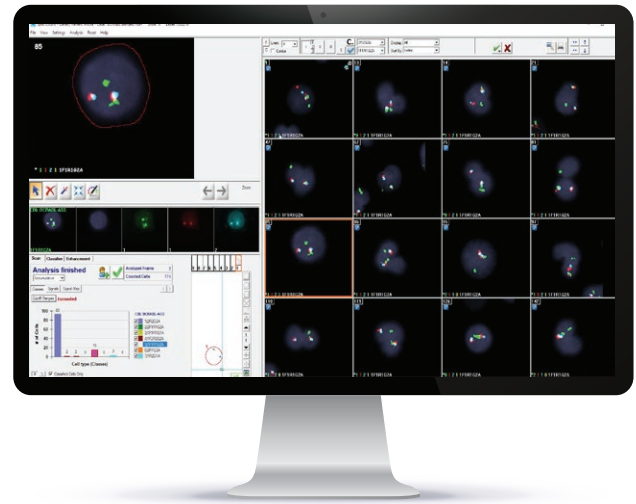
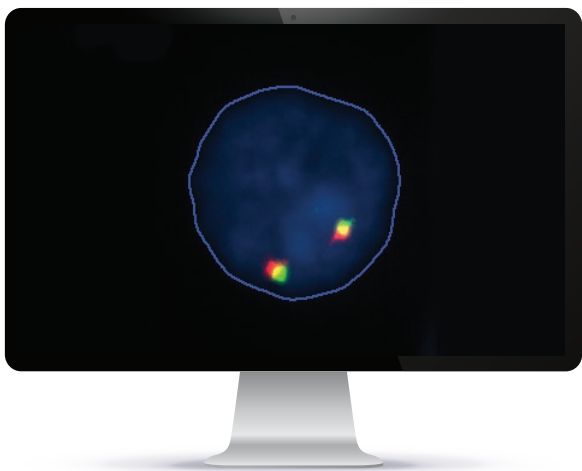
"AI-trained karyotyping, which can present **hundreds of metaphase-karyogram pairs for analysis**, facilitated assessment of the rapid evolution of clonal chromosome abnormalities."

Rosenblum LS et al. *J Mol Diagn* 27(11), S13, 2025



# HiFISH

HiFISH is a cutting-edge **computer-aided digital FISH scanning and analysis** solution offering advanced computational tools and user-centric workflows. Vendor-agnostic, the system supports **unlimited number of probes** which are optimized based on users' needs. Combining 3D cell review with robust image quality through **adaptive image optimization**, HiFISH provides standardized results based on computer-aided signal detection and cell classification. Flexible analysis workflows for single or multiple readers, associated with **semi-quantitative FISH analysis**, offer high versatility to address most laboratory needs.



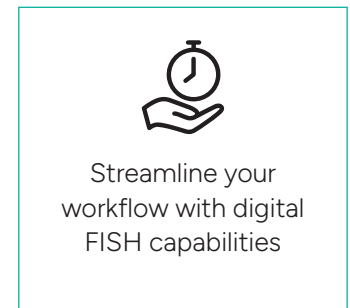
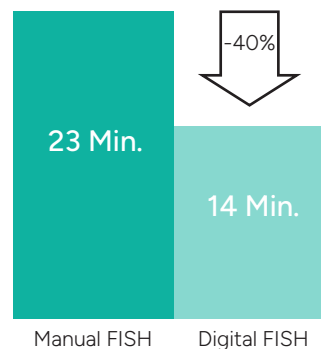
## Benefits to your lab

- ◆ **FISH scanning** optimized per hybridization
- ◆ Unlimited number of **vendor-agnostic** probes
- ◆ **Digital 3D review** of each cell
- ◆ Cell gallery for **fast classification** & review
- ◆ Real time **computer-aided analysis**
- ◆ Detection of **abnormal patterns**
- ◆ Option for multi-reader **double blinded review**
- ◆ **Simultaneous interphase & metaphase** capture

◆ "A 40% reduction in analysis time was observed when comparing the time spent analyzing bone marrow FISH slides manually and digitally. In addition to the standardization resulting from the digital approach, this enhanced efficiency is poised to contribute to the expediting of turnaround times." ◆

*Neuhaus M et al. European Cytogenetics Association Newsletter 56, P1029, 2025*

## Over 40% Reduction in Analysis Time (in minutes/case)

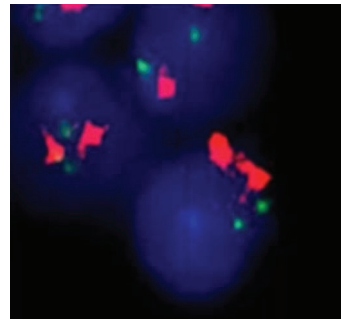


## Robust Image Quality Using Adaptive Statistical Algorithms

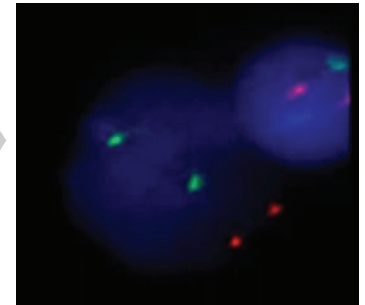
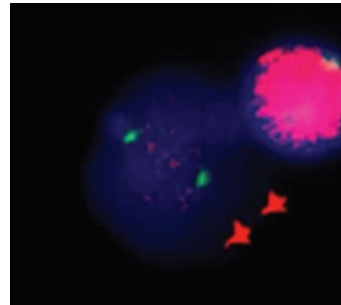
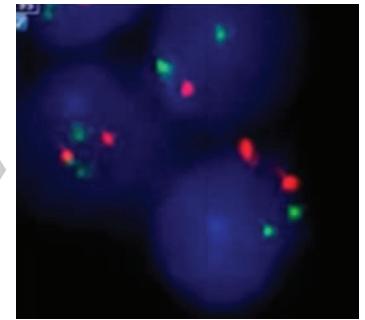
Validated to identify what the human eye may not see for standardized results

- ◆ **Acquisition parameters** optimization
- ◆ **Consistent signal** appearance across sample
- ◆ **Reduction of external debris** and nuclear noise
- ◆ Optimized **visualization and classification**

Original image



With computer-aided tools

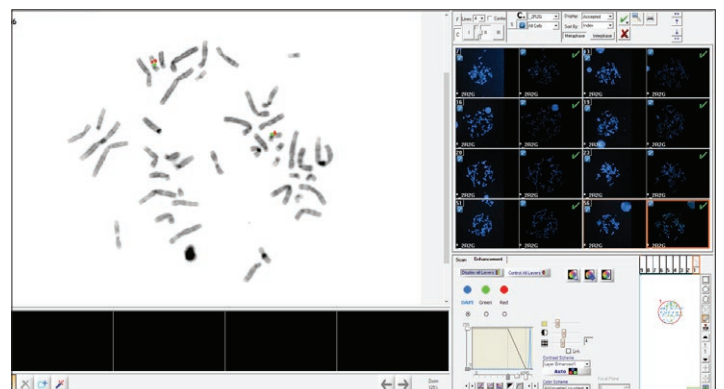
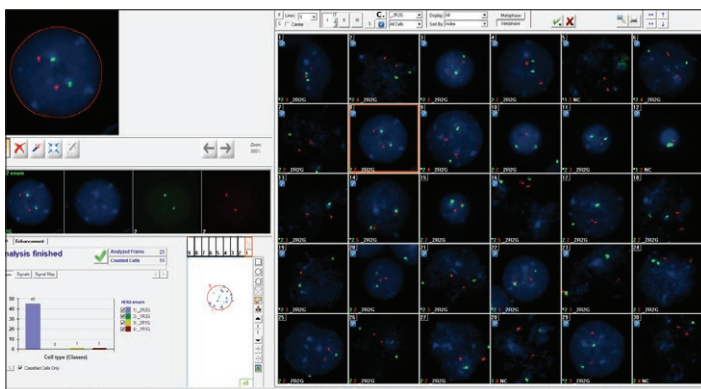


◆ "Use of a slide scanner allows for standardization between techs, enabling confidence in training less experienced individuals without negatively impacting clinical results." ◆

*Landi A et al. Journal of Molecular Diagnostics 26(11), S162, 2024*

## QC Application - Simultaneous Interphase & Metaphase Scanning

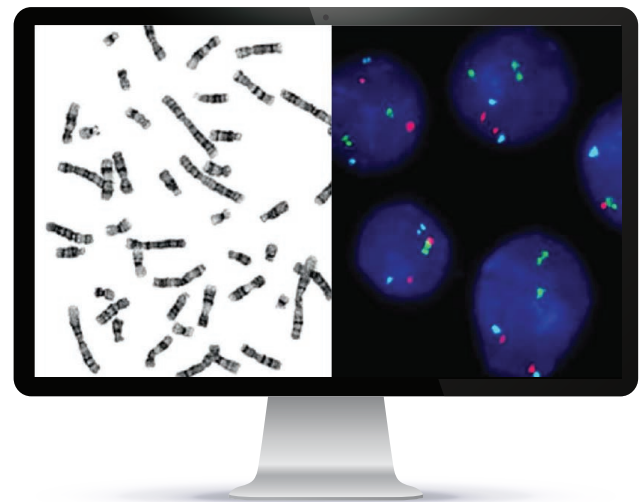
Identify probe signals on chromosomes to confirm FISH analysis accuracy





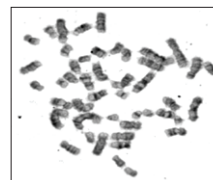
# CytoPower

**CytoPower** is an end-to-end digital imaging and analysis solution for **both brightfield and fluorescent specimens**, combining **HiBand** for chromosome review and computer-aided karyotyping, and **HiFISH** for digital FISH analysis.

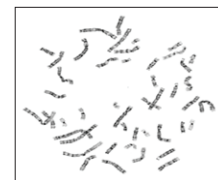


## Benefits to your lab

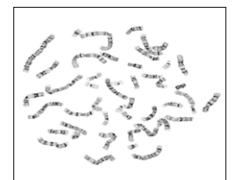
- ◆ A **single platform** for karyotyping and FISH
- ◆ Clinical applications for **all sample types**
- ◆ **User-centric workflows** and feature-rich applications
- ◆ **Customizable case reports** with images and semi-quantitative results



Bone Marrow




Blood



Amniotic Fluid



"Semi-automated FISH analysis is a sensitive and accurate approach for evaluating cell suspension specimens."

"The average analysis time for the whole AML panel (10 probes) is 30 minutes vs 90 minutes with the manual method." 

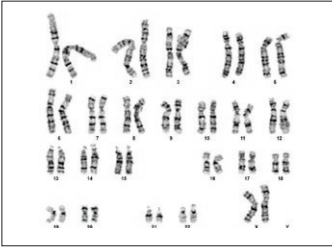
*Best J et al. Cancer Genetics 252-253 (S1), S3, 2021*



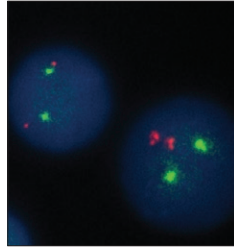
## Integration with Imaging Management Systems

PortalLink is a powerful new integration solution that seamlessly delivers FISH images into third-party digital image management systems, enabling unified case review alongside all other diagnostic data.

## Hematology FISH Workflow



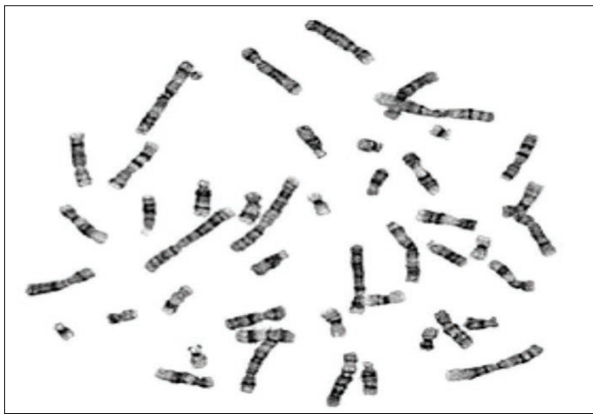
Karyotyping  
Brightfield  
Microscopy



FISH  
Fluorescence  
Microscopy

## Digital Chromosome Analysis

Efficiency, Precision and Versatility



High resolution 5MP camera combined with a high quality 100x immersion oil objective

## Broad Staining and Sample Menu



G-Band



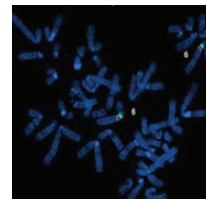
Q-Band



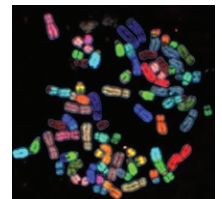
R-Band (BF)



R-Band (FL)

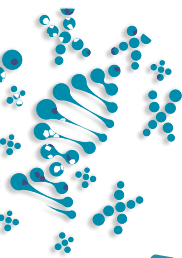


FISH



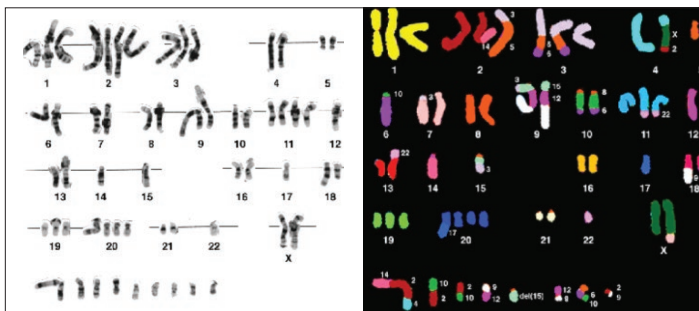
Spectral



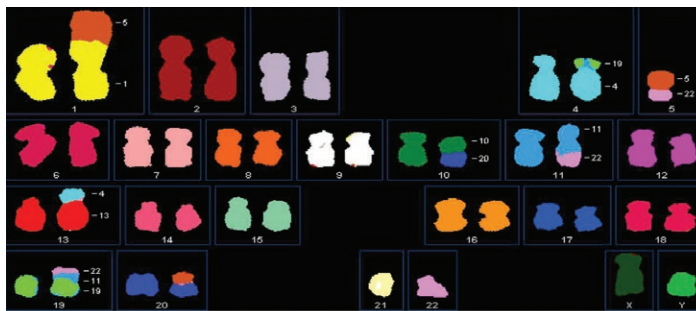


# Research Applications

## HiSKY\* Gold Standard Spectral Karyotyping



Brain Tumor



Ewing Sarcoma

## Multi-Color FISH Analysis for Result Verification

- Identification of **translocations** and **chromosomal origins**
- Simultaneous detection of **chromosomal aberrations** in one hybridization
- Measurement of **entire spectrum** at each point

## HiSKY Probe Kit

Chromosome paints for:

- Human
- Mouse



"Spectral karyotyping (SKY) is for detecting the whole genome in all types of chromosomal abnormalities in any individual. This is because all types of chromosomal abnormalities affect many genes, leading to cancers and many types of syndromes such as Edward's and Down's syndromes."

Van Wieren A. *Bioengineering Studies* 3(1), 7-14, 2022

## Multispecies Chromosome Analysis and Karyotyping

HiBand and HiFISH software support genetic research programs with **multispecies chromosome analysis** and karyotyping for brightfield and FISH specimens, featuring multiple classifiers for both animals and plants.

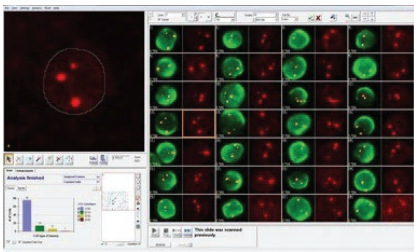
## Benefits to your lab

- Finding **all metaphases** and optionally sorting them by quality
- Capturing** preferred ones without any human interaction
- Possibility to run pathology applications **on same system**

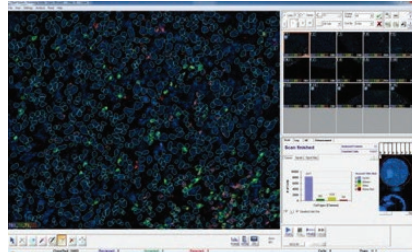


\*HiSKY is for research purposes only

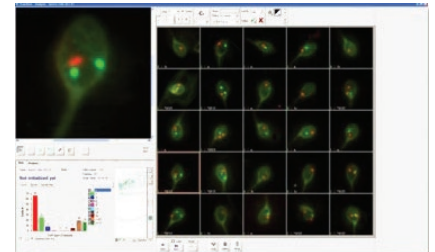
## FISH for Research



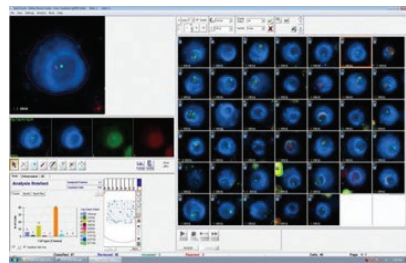
Circulating Tumor Cells



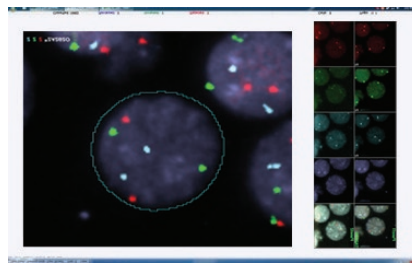
Immuno Fluorescence



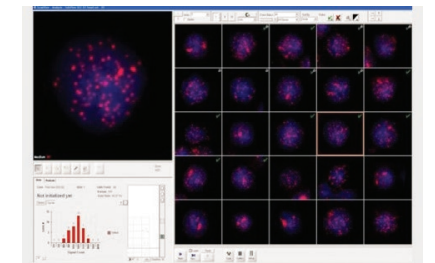
Sperm Cells



clgFISH



Successive Staining



Telomeres

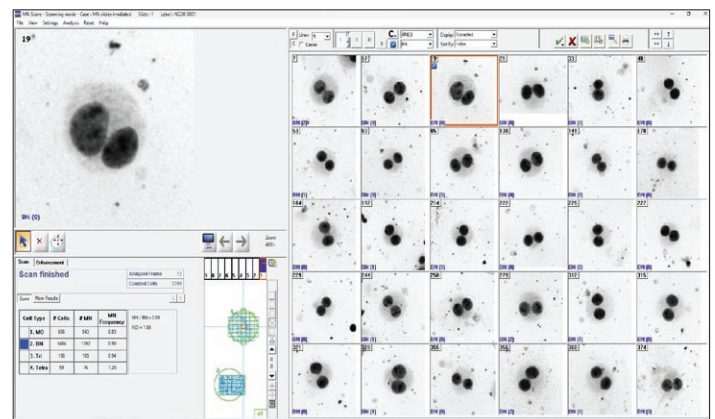
## Quality Control of Probe Assays

- Cell phenotyping and signal classification
- Measurement and display of multiple cellular and signal properties

Cell#	Area	Circularity	Class	Int. DAPI	Int. Green	Int. Red
381	4262	1.140	Normal	3556589	1882137	1596878
219	12440	1.125	Normal	8773400	6739819	5489715
388	10668	1.139	Normal	16642003	6643912	6583058
482	6221	1.145	Normal	3966427	2534639	2365928
445	6099	1.176	Normal	3837185	2825412	2300399
333	8029	1.129	Normal	5857952	4146372	2965229
413	6671	1.118	Normal	6591132	2870362	2801938
330	7027	1.234	Normal	4263617	2849966	2167041
409	7706	1.131	Normal	7995300	4350832	4091139

## MN Score

**Micronuclei imaging**, scoring and analysis for measurement of DNA damage, cytostasis and cytotoxicity.



# A Comprehensive Digital Chromosome Analysis and FISH Workflow

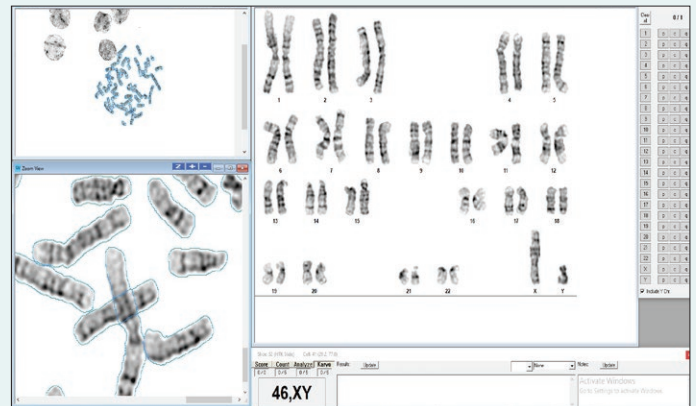
## 1 Scan & Capture

Digitize your slides and run aided-karyotyping automatically while scanning

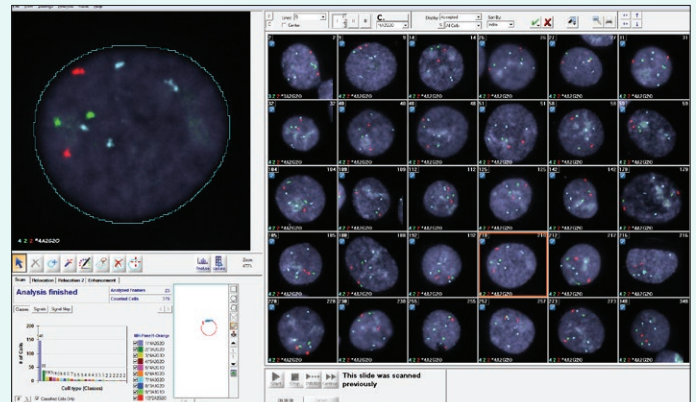
## 2 View & Analyze

Analyze images using computer-aided karyotyping\* and FISH classification

HiBand



HiFISH



\* Computer-aided chromosome analysis and karyotyping is also available on images acquired on third-party scanners. Please ask your ASI representative for more details.

# 3

## Review & Sign-Off

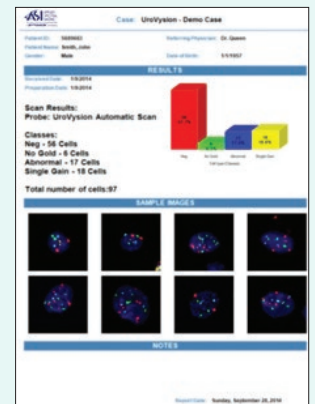
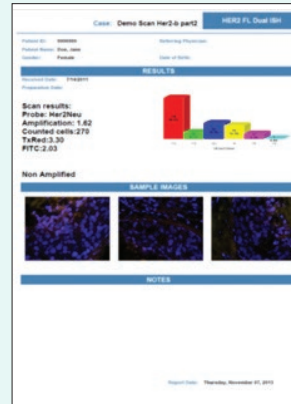
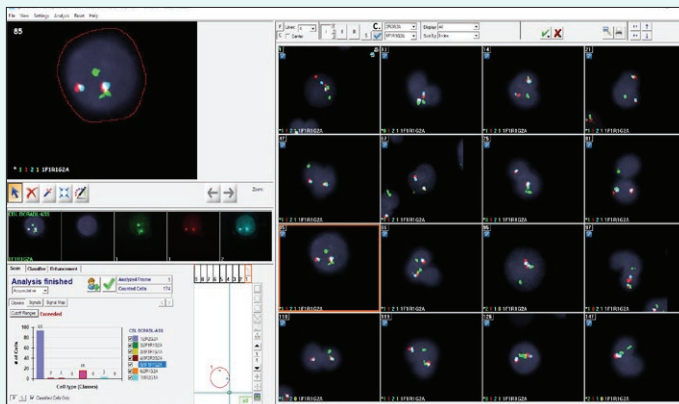
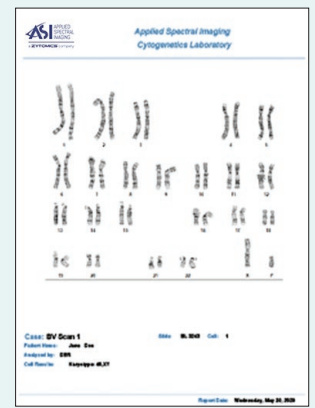
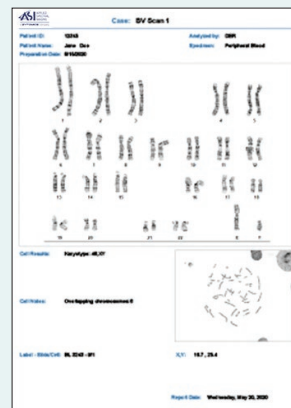
Review and approve karyogram and statistical results of FISH signals



# 4

## Report

Submit comprehensive case details including screenshots, images and semi-quantitative results

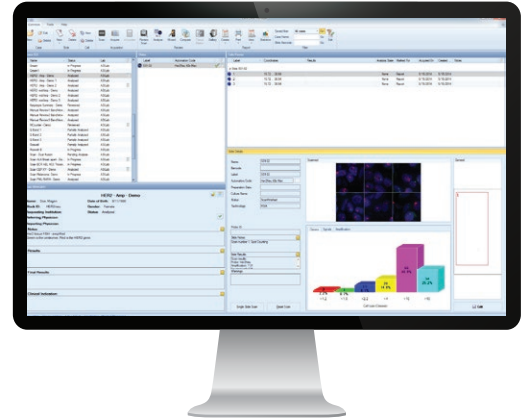


## Case Data Manager and LIS Connectivity

With its **Case Data Manager (CDM)** application, ASI offers a unique and comprehensive solution that can help streamline the data management process and provide a more **efficient and secure system** for the cytogenetic laboratory. By integrating with the **Lab Information System (LIS)**, ASI's platform can help manage data more effectively, saving time and resources.

### Benefits to your lab

- ◆ **Paperless** workflow
- ◆ Central portal and **database**
- ◆ Secure integration with **LIS**
- ◆ APIs for **multiple LIS support**
- ◆ Supports **HL7/FHIR, XML, ShireText** and more
- ◆ Data integrity & **HIPAA compliance**



## GenASIs AnyWhere

ASI's **advanced virtual access** solution enables HIPAA-compliant access to your lab's GenASIs platform from any location. This secure solution makes remote data management easy, ensuring that you can **access your lab's data anytime, anywhere**.

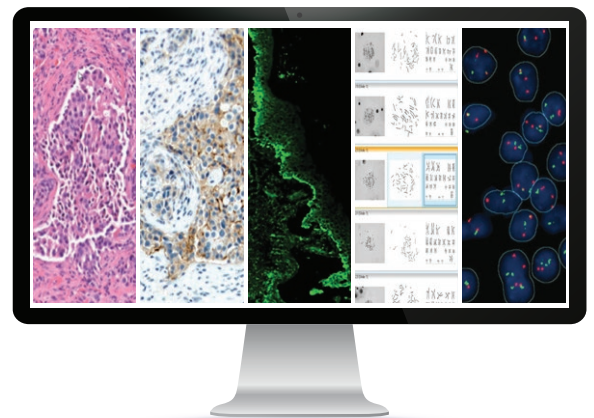
### Benefits to your lab

- ◆ Optimal for **remote consultation**, educational and training needs
- ◆ Uncompromised **data security**
- ◆ Efficient management and maintenance of **multiple systems, and users**
- ◆ Compatible with Microsoft Remote Desktop Services (**RDS**)  
**Citrix, VMware Horizon**



## All-in-One Solution

Combining digital pathology, karyotyping, IF and FISH, ASI's **All-in-One** solution offers a **comprehensive workflow** from scanning to image viewing, semi- quantitative analysis and reporting for both brightfield and fluorescent images. All-in-One provides a modular and versatile solution addressing the needs of both **cytogenetics** and **pathology** laboratories in one single platform.



## Advanced Reporting

ASI's reporting tool provides a user-friendly interface to create laboratory-branded **customizable reports** according to the user's needs.

### Benefits to your lab

- ◆ **Dedicated report** for each application
- ◆ **Quantitative** and **graphical** results
- ◆ User-selected **screenshots** and **images**
- ◆ **Freehand report** using multiple annotation styles

## Future-Ready IT System

Take advantage of ASI's future-ready platforms to enhance the **compliance and security** of your lab operations.

### Benefits to your lab

- ◆ **IT readiness** with Windows 11, MS Windows Server 2025, MS SQL Server 2025
- ◆ Transparent Database Encryption (**TDE**)
- ◆ **Enterprise infrastructure** for larger databases
- ◆ Citrix/RDS **virtualization**
- ◆ **Cybersecurity compliance** including penetration test certificate

## LabLife Statistics



**Benchmarks**  
Calculate performance and track KPIs



**Optimization**  
Identify best practices to increase ROI



**Growth**  
Justify investment in additional capital equipment



**Annual Review**  
Compare performance year on year

## Diverse Image Acquisition Platforms



1-Slide Capture System



9-Slide Scanning System



99+ Slide Tray Loader



HyperSpectral System



Review & Analysis Station



AnyWhere Remote Connectivity

## Adapted Service Offering

The ASI team is committed to supporting your laboratory by providing expert and superior service throughout the year. Different **Service Packages** are available to provide the highest level of service according to your specific needs.

# System Specifications



Manual 1 Slide



9 Slide Motorized Stage



99+ Slide Tray Loader



HyperSpectral  
1 Slide\*\*\*

		HiBand	HiFISH	HiBand	HiFISH	HiBand	HiFISH	HiSKY
Microscope Support		BF upright microscopes	FL upright microscopes	OLYMPUS BX63* BF ZEISS Axiolmager Z2 BF		OLYMPUS BX63* BF ZEISS Axiolmager Z2 BF		BF & FL upright microscopes
Objectives	OLYMPUS	10x/0.3NA 100x/1.3NA	10x/0.3NA 60x/1.25NA	1.25x/0.04NA** 10x/0.3NA 100x/1.3NA	4x/0.8 NA 10x/0.3NA 20x/0.8 NA 40x**/0.75NA 60x/1.42NA	1.25x/0.04NA** 10x/0.3NA 100x/1.3NA	4x/0.8 NA 10x/0.3NA 20x/0.8 NA 40x**/0.75NA 60x/1.42NA	10x/0.3NA 63x/1.44NA 100x/1.3NA
	ZEISS		10x/0.3NA 63x/1.44NA		5x/0.16NA 10x/0.3NA 20x/0.5NA 40x**/1.3NA 63x/1.44NA		5x/0.16NA 10x/0.3NA 20x/0.5NA 40x**/1.3NA 63x/1.44NA	
Camera		5MP CMOS Monochrome		5MP CMOS Monochrome		5MP CMOS Monochrome		Spectral 1.3MP Monochrome
Slide Capacity		1 Slide		9 Slides		99 Slides		1 Slide
Barcode Reader		Handheld 1D/2D		Handheld 1D/2D		Integrated 1D/2D		Handheld 1D/2D
Automated Oil Dispenser		N/A		Optional		Integrated		N/A
Dimensions (WxDxH)		According to installed microscope		61cm x 69cm x 85cm (24"x27.2"x33.5")		100cm x 90cm x 90cm (39.4"x35.5"x35.5")		According to installed microscope
Weight		According to installed microscope		45kg   99.2lb		80kg   176.4lb		According to installed microscope

\* ASI still supports Olympus BX61

\*\* Optional

\*\*\* This hardware component is supported only up to version 8.4.1

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