CytoVision® 7.0
The platform for every cytogenetics lab
A proven, future-proof platform

Used in over 2000 laboratories worldwide, the CytoVision® platform provides the convenience and comfort of on-screen analysis together with flexibility in software and hardware configurations.

CytoVision supports the simplest, single application workstation through to fully networked, multi-application, nationwide programs.

New

The new CytoVision 7.0 software, optimized for the latest Windows® 7 operating system, ensures future-proof compatibility. This latest version features enhanced FISH imaging and includes support for the Leica DM6000B microscope to ensure high quality optics.

Current users of CytoVision should contact their local representative to discuss the potential for upgrading.

Reduce reporting times, improve consistency, free skilled staff for quality analysis

Many facilities face growing demands to increase productivity and efficiency, reduce backlogs and speed up reporting.

Unattended scanning and capture using the unique combination of CytoVision software and GSL slide loaders enable cytogeneticists to fulfil these demands.

Unattended scanning, location and capture

Slide loader and microscope controlled by CytoVision software: samples scanned at low power (10X), cells located, oil dispensed automatically, cells captured (63X/100X)

“Spending ages scanning slides is a thing of the past!”

Technologist at Cytogenetics Laboratory, Yorkhill Hospital, Glasgow, UK
A choice of application modules within CytoVision

A broad range of application modules ensures full flexibility to meet changing laboratory requirements.

Focuses experts on critical analysis steps

Select and analyze cells at desktop review stations

Operator actions recorded for every case

Reduces reporting and turnaround times

Operator results archived and reports generated

"With work force reduction of 480 hours, the TAT was reduced by 0.3 days without compromising abnormality rate."

Christine M. Higgins, MMI Human Genetics Lab, Omaha, NE, USA.
CytoVision analysis modules support a variety of applications including metaphase finding and karyotyping for human and non-human cell lines. In the example shown here, a simple interface leads the analyst through each stage of karyotyping and analysis.

Select the best captured cells from the Organize screen

Every cell is shown in a gallery.

Count and karyotype on the Analyze screen

Analysis of cells automatically tracked.
Digital record of count and results kept for security.
Progress tracked during analysis as each class is marked off.
Ensure quality control using Clear Cells screen – easily check classes

Each class is marked with clearly visible homologues. Use karyotypes to clear classes and scroll through remaining cells to check any unclear classes. A record of karyotypes or metaphases is kept for each cell to ensure sufficient homologues are checked.

Review case summary on the Report screen

Digital records contain cell coordinates, images and results. Images and reports can be annotated and printed or exported to a LIMS.

“I much prefer analyzing chromosomes on my large screen… easier on the eyes, more comfortable on the body and, more importantly, I am happier analyzing chromosomes when they are paired up side by side than at opposite ends of a metaphase.”

Technologist at Cytogenetics Laboratory, Yorkhill Hospital, Glasgow
On-screen analysis brings FISH out of the dark room

Fluorescence analysis modules in CytoVision support a variety of applications including FISH, spot counting/interphase FISH, CGH and M-FISH

Automated slide loaders enable unattended scanning, location and capture of fluorescence images, minimizing fading problems, and sending images to review stations for on-screen analysis. Simple interface screens guide the operator through the analysis workflow, as illustrated by this cellular FISH example.

Capture high quality images

Low power scanning (10X) locates interphase cells. Frames are then captured at high power with DAPI masking of probe signals to eliminate extraneous fluorescence outside of cells. Captured frames are displayed for manual or automatic scoring.

Capture high quality images

Dynamic Z-stack multi-plane imaging captures images of counter stains and probes through each cell. Virtual microscopy enables dynamic focusing, up and down through the image.
Choose scoring process

Automatic:
Display scored cells in a grid for easy viewing and sorting of cells assigned to each class.

Manual:
Create assay, name classes and assign to function keys. Class totals are updated as cells are scored.

Produce customizable reports for export

Add annotations

Include scores, patient data and images
Improvements in productivity and efficiency—extracts of reports from around the world

The West of Scotland Regional Cytogenetics Service, U.K. provides a region-wide service for analysis of around 2800 post-natal blood samples per year. Each slide is scanned for up to a maximum of 300 metaphases and the 50 best cells are captured for analysis.

- Increase in quality of urgent and routine samples
- Decrease in reporting times
- Increase in % of cases reported within guideline times
- Increase in success rate, decrease in poor quality rate

Reduced backlog of cases

Data courtesy of L. Monkman, J. Colgan, L. Crawford, M. Campbell, G. Lowther Cytogenetics Laboratory, Duncan Guthrie Institute of Medical Genetics, Yorkhill Hospital, Glasgow

The South West Thames Regional Genetics Service, part of the St. George’s Healthcare NHS Trust in the UK, had a routine blood sample backlog for nearly 4 years, due to staff shortages.

Within 30 days:

- CytoVision and GSL-120 integrated into in-house LIMS
- Classifiers designed for specific cultures
- Staff fully trained

Within 4 months:

- Fully automated workflow from scan to report for blood and pre-natal samples
- Backlog reduced from 500 to 70 cases
- Reporting times dropped from 116 days to 28 days
- Decrease in inscription errors
- Improved staff morale

Backlog cleared 8 months ahead of schedule

Data courtesy of Victoria J. Anthony-Dubernet, Clinical Cytogeneticist, South West Thames Regional Genetics Service, St. Georges Hospital, London
The University of Nebraska Medical Center in Omaha, Nebraska compared work hours, TAT and abnormality rate between 60 day periods before and after implementation of a GSL-120 slide loader for unattended scanning, location and capture.

- Work hours cut by 480 hours
- Turnaround time (TAT) reduced by 0.3 days
- Abnormality rate maintained

Sonora Quest Laboratories in Tempe, Arizona evaluated efficiency gains by collecting time requirements for scanning, capture and karyotyping of 220 neoplastic cases and comparing with time required to run 152 cases using CytoVision and GSL-120.

- Reduced time for case completion by 31.06 mins (20.45%)
- Decreased failure rate to 1.5%
- Removed human inattention from equation
- Located metaphases on slides a technologist may assume to be empty

Data courtesy of Leah Weems, BS, CLSp (CG) Angela Fylak, BA., Sonora Quest Laboratories, Tempe, Arizona

Genetix would like to thank everyone featured here and on our web site for their kind permission to present excerpts from their work.
A solution for every cytogenetics lab

Configurations to match applications, throughput and networking requirements

Building from CytoVision software for review, workstation solutions can be configured to match the applications, throughput, imaging and automation requirements of any cytogenetics lab.

Ready to meet increasing caseloads and facilitate workload balancing

The CytoVision platform enables expansion from a single review station to fully automated scanning and capture stations with review stations supported by server networks and LIMS connections.

This table gives a general guideline to creating optimal CytoVision configurations. Your local representative will be happy to assist in finalizing your exact requirements.

<table>
<thead>
<tr>
<th>Software</th>
<th>One step slide loading, scanning and capture</th>
<th>Scanning and capture with manual oiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>CytoVision 7.0 using Windows 7 operating system</td>
<td>CytoVision 7.0 using Windows 7 operating system</td>
</tr>
<tr>
<td>Microscope</td>
<td>Leica DM6000B</td>
<td>Leica DM6000B</td>
</tr>
<tr>
<td>Digital cameras</td>
<td>1600 x 1200 pixels</td>
<td>1600 x 1200 pixels</td>
</tr>
<tr>
<td>Slide loader or motorized stage</td>
<td>GSL-120 (up to 120 slides per run) or GSL-10 (10 slides per run)</td>
<td>8-bay motorized stage</td>
</tr>
<tr>
<td>Bar code reader and oiler</td>
<td>integrated</td>
<td>n.a.</td>
</tr>
<tr>
<td>Application options</td>
<td>Karyotyping</td>
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</tr>
<tr>
<td>Application options</td>
<td>FISH</td>
<td>FISH</td>
</tr>
<tr>
<td>Monitor</td>
<td>24&quot; LCD</td>
<td>24&quot; LCD</td>
</tr>
<tr>
<td>System architecture (1 to 9 stations)</td>
<td>Internal domain server SQL CaseBase Data archive: 2TB using internal 4TB RAID5 array</td>
<td>Internal domain server SQL CaseBase Data archive: 0.5TB using internal 1TB RAID1 array</td>
</tr>
<tr>
<td>System architecture (10 or more stations)</td>
<td>External domain server SQL CaseBase Data Server: 2TB using 4TB RAID5 array</td>
<td>External domain server SQL CaseBase Data Server: 2TB using 4TB RAID5 array</td>
</tr>
<tr>
<td>UPS</td>
<td>Standard</td>
<td>Option</td>
</tr>
</tbody>
</table>
### Standard capture station with on-screen analysis

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CytoVision</td>
<td>7.0 using Windows 7 operating system</td>
</tr>
<tr>
<td>Microscopes</td>
<td>Leica DM2500, Leica DM6000B, Other manufacturer microscopes subject to specification</td>
</tr>
<tr>
<td>Resolution</td>
<td>1300 x 1024 pixels</td>
</tr>
<tr>
<td>Display</td>
<td>24&quot; or 22&quot; LCD flat panel</td>
</tr>
<tr>
<td>Computer server</td>
<td>Internal domain server</td>
</tr>
<tr>
<td>Database storage</td>
<td>SQL CaseBase, Data archive: 0.5TB using internal 1TB RAID1 array</td>
</tr>
</tbody>
</table>

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### Review station for on-screen analysis

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<td>Display</td>
<td>24&quot; or 22&quot; LCD flat panel</td>
</tr>
<tr>
<td>Computer server</td>
<td>n.a.</td>
</tr>
<tr>
<td>Database server</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

### Software license for review station

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>License</td>
<td>User-provided computer (subject to minimum specification)</td>
</tr>
<tr>
<td>Computer server</td>
<td>n.a.</td>
</tr>
<tr>
<td>Database server</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

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Note: The table includes a variety of features and details for both the standard capture station and review station, as well as the software license required for the review station. The specifications and requirements are subject to change and should be verified with the respective vendors or manufacturers.
Genetix provides unrivalled solutions based on imaging excellence and intelligent image analysis

Headquartered in New Milton, UK, Genetix is an independent business unit within Leica Microsystems, providing scientists with unrivalled solutions that utilize imaging and intelligent image analysis. The company’s CytoVision platform is used for chromosomal investigations in cytogenetics laboratories in over 80 countries worldwide. In basic research, pharmaceutical and biotherapeutic development, Genetix systems continue to establish industry standards in areas such as picking microbial colonies for genomic studies or screening and selection of mammalian cell lines. Other systems use imaging platforms to monitor cell growth, evaluate cellular responses and quantify protein production. Through its expertise in robotics, cell and molecular biology, image analysis and interpretation, supported by a strong IP portfolio, Genetix is committed to the continual development of innovative solutions.

For more information, visit www.genetix.com

Intended Use (US)
In the US, CytoVision® Karyotyper and CEP XY are For In Vitro Diagnostic Use. All diagnostic decisions are made by the qualified clinician. All other applications are for Research Use Only. Not for Use in Diagnostic Procedures.

Intended Use (EU, Canada and Thailand)
In the EU, Canada and Thailand, only CytoVision Karyotyper is For In Vitro Diagnostic Use. All diagnostic decisions are made by the qualified clinician. All other applications are For Research Use Only.

Please refer to www.genetix.com for most recent ‘intended use’ statements in your region.

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