

Genius Digital Diagnostics System*

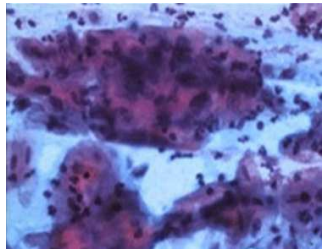


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Diagnostic Solutions

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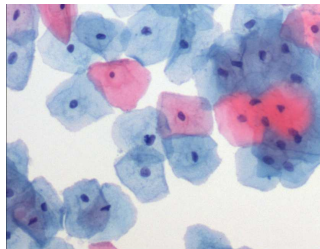
Cervical Cancer Screening Technology



1940s

The Pap Smear

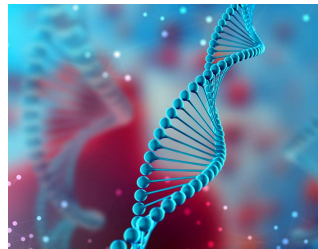
- ✓ Limited sensitivity
- ✓ Excellent specificity



1990s

Liquid-Based Cytology¹

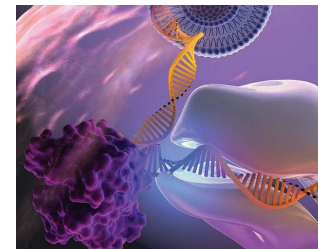
- ✓ Improved sensitivity
- ✓ Excellent specificity



2000s

HPV DNA Testing²

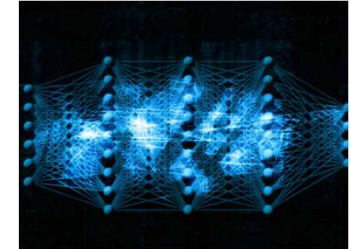
- ✓ Excellent sensitivity
- ✓ Limited specificity



Today

HPV mRNA Testing³

- ✓ Excellent sensitivity
- ✓ Increased specificity



New

Artificial Intelligence Digital Image Analysis⁴

1. ThinPrep 2000: MAN-06366-001.

2. Wright TC, Schiffman M, Solomon D, et al. Interim Guidance for the Use of Human Papillomavirus DNA Testing as an Adjunct to Cervical Cytology for Screening. Obstet Gynecol 2004;103(2):304-309.

3. Aptima HPV: AW-14517-001.

4. Digital Diagnostics Review Station Manual MAN-06184-001. Hologic, Inc; 2020.

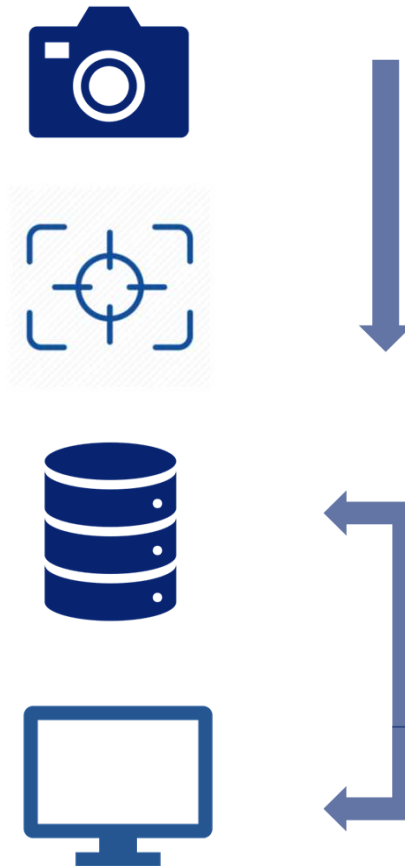
Why Has Digital Cytology Lagged Behind Digital Pathology?

Challenges of Cytology Digitalisation



Basic Digital Imaging Process

- ① A glass microscope slide is digitally imaged.
- ② The whole slide image (WSI) is captured.
- ③ The WSI is stored on a server for retrieval.
- ④ WSI is reviewed at a local or remote location on a high-resolution monitor.



Challenges with Digital Cytology Imaging



Unfocused Image



Large File Size

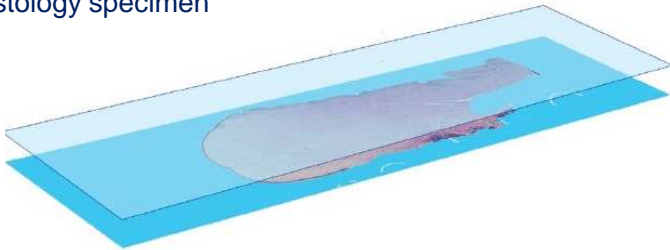


Slow Scan Speed

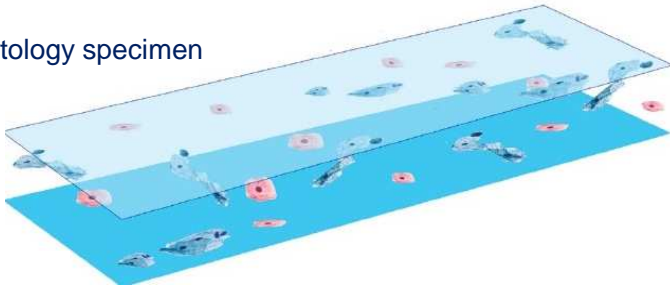
Challenge: Unfocused Image

Cytology specimens contain 3D cell groups, and cells are located at different focal planes between the coverslip and glass slide.¹

Histology specimen

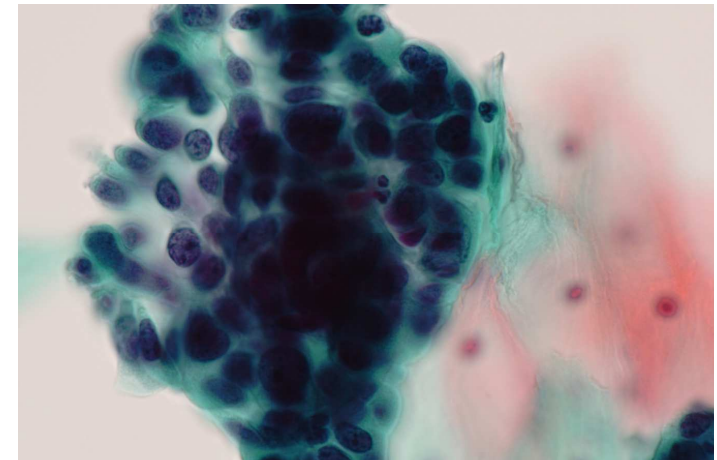


Cytology specimen



IMPACT

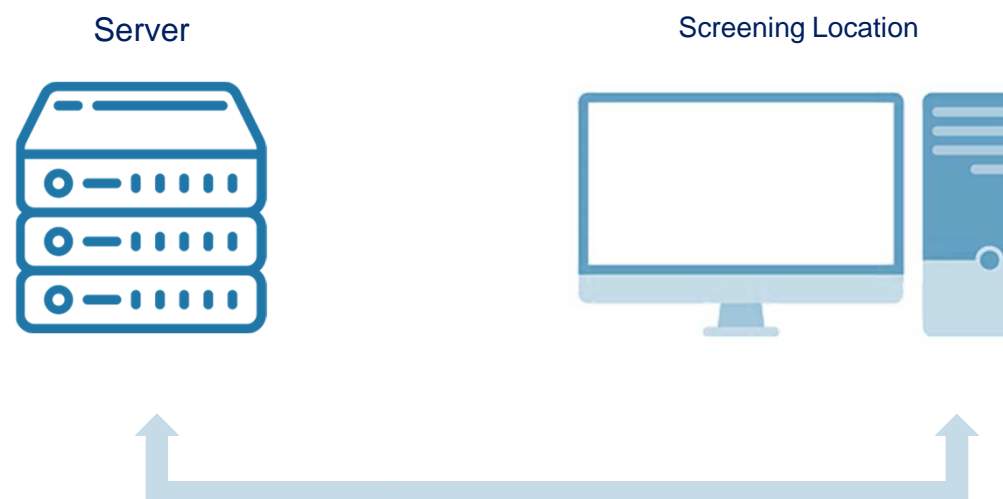
Poor quality, unfocused image may not be suitable for cytology evaluation.²



1. Lee, Roy & McClintock, David & Laver, Nora & Yagi, Yukako. (2011). Evaluation and optimization for liquid-based preparation cytology in whole slide imaging. Journal of pathology informatics. 2. 46. 10.4103/2153-3539.86285.
2. Hanna MG, Pantanowitz L. Why is digital pathology in cytopathology lagging behind surgical pathology? Cancer Cytopathol. 2017 Jul;125(7):519-520. doi: 10.1002/cncy.21855. Epub 2017 May 5. PMID: 28475271.

Challenge: Large File Size

High resolution scanning is ideal to create quality cytology images but creates very large file sizes.¹



IMPACT

Large image files transmit very slowly between locations.
Storing and retrieving digital images could be impractical.

1. Hanna MG, Pantanowitz L. Why is digital pathology in cytopathology lagging behind surgical pathology? Cancer Cytopathol. 2017 Jul;125(7):519-520

At this rate, scanning a circular ThinPrep® cell spot region to a depth of 14 focal planes would take at least 26 minutes.^{2,3}

Scanning multiple focal plans with a traditional imager could take too long to be practical in a clinical setting.

1. Andrew J. Evans, Mohamed E. Salama, Walter H. Henricks, and Liron Pantanowitz. "Implementation of Whole Slide Imaging for Clinical Purposes: Issues to Consider From the Perspective of Early Adopters". Arch Pathol Lab Med. 2017; 141:944-959.
2. Hologic Data on File Ref: GeniusDigitalDiagnosticsDataRev001
3. Peng, S. & Mayer, S. How Thin is a ThinPrep Slide? Challenges of Achieving High Focus Quality on a Digital Whole Slide Imaging System. Digital Pathology Association, 2019.

Summary of Digital Cytology Imaging Challenges¹

Poor Image Quality:



Large File Size:



Slow Scan Speed:



IMPACT

Digital pathology systems designed for histology specimens may not be suitable for cytology.

1. Hanna, M.G. & Pantanowitz, L. Why is Digital Pathology in Cytopathology Lagging Behind Surgical Pathology? Cancer Cytopathology. 2017; July: 519-520.

Introducing Genius Digital Diagnostics System*

Transforming Cervical Cancer Screening

HOLOGIC®

Digital Diagnostics is the next step in cervical cancer screening, empowering labs with a new powerful technology to help eradicate cervical cancer.

The system combines a new artificial intelligence (AI) algorithm with advanced digital imaging technology designed to accurately and efficiently direct cytologists to pre-cancerous and cancer cells on ThinPrep® Pap Test digital images.¹



1. Digital Diagnostics Review Station Manual MAN-06184-001. Hologic, Inc; 2020.

* May not be available in all markets. Contact your local Hologic representative for availability in your country.

Diagnostic Solutions

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Genius Digital Diagnostics System*

A complete digital cytology solution from digital imaging to review

Digital workflow with remote case review radically transforms cytology laboratory workflow to promote enhanced lab efficiency.



Digital Imager



Cervical Cancer
Screening Algorithm



Image Management Server



Review Station

Genius Digital Diagnostics System*

Transforming Cervical Cancer Screening



Next generation imaging technology produces exceptional image quality.¹



New artificial intelligence algorithm designed to accurately detect pre-cancerous and cancer cells on ThinPrep® Pap test slides.²



Seamless and dynamic collaboration with remote digital case review.



Radically transform workflow with digital case movement, promoting enhanced efficiency.



1. Digital Diagnostics Digital Imager MAN-06738-001. Hologic, Inc; 2020.
2. Digital Diagnostics Review Station Manual MAN-06184-001. Hologic, Inc; 2020.

* May not be available in all markets. Contact your local Hologic representative for availability in your country.

Genius Digital Diagnostics System Workflow*

The only comprehensive cervical cancer screening portfolio from sample collection to digital diagnosis.¹

1

Sample collection in PreservCyt® solution²



2

Slide creation Using ThinPrep® processors and consumables



3

Digital images produced AI Image Analysis conducted³



4

Digital images sent to Image Management Server³



5

Case retrieved from server for screening at Review Station³



1. Hologic Data on File Ref: GeniusDigitalDiagnosticsDataRev001
2. ThinPrep 2000: MAN-06366-001.
3. Digital Diagnostics Digital Imager MAN-06738-001. Hologic, Inc; 2020.

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Diagnostic Solutions

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Genius Digital Diagnostics System*

Digital imager

HOLOGIC®

Engineered for cytology and optimised for clinical labs, the Digital Imager delivers exceptional image quality at high throughput.



- ThinPrep® Gyn, Non-gyn, and UroCyte® slides
- 10 carrier, 400 slide capacity
- Random access
- Stat carrier management
- Feature rich software with integrated touchscreen



Digital Diagnostics Digital Imager MAN-06738-001. Hologic, Inc; 2020.

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Genius Digital Diagnostics System*

Digital imager

HOLOGIC®

Imaging cytology presents unique challenges because of 3-dimensional cell groupings.¹

The Digital Imager's next generation technology quickly converts ThinPrep® cytology slides into high resolution, all-in-focus digital images.² Overcoming the challenges of imaging cytology to produce exceptional image quality.

HOW IT WORKS

Next Generation Imaging Technology³



Volumetric Scan

A single scan simultaneously acquires up to 14 focal planes, eliminating the need to scan each layer individually.



Adaptive Focus

Curve-following scanning method minimises local focus errors, providing higher quality cytology images.



Focus Merge

Powerful image processing merges in-focus pixels from multiple planes into a single layer.

1. Hanna MG, Pantanowitz L. Why is digital pathology in cytopathology lagging behind surgical pathology? Cancer Cytopathol. 2017 Jul;125(7):519-520. doi: 10.1002/cncy.21855. Epub 2017 May 5. PMID: 28475271.
2. Digital Diagnostics Digital Imager MAN-06738-001. Hologic, Inc; 2020.
3. Hologic Data on File Ref: GeniusDigitalDiagnosticsDataRev001

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Genius Digital Diagnostics System*

Cervical Cancer Screening Algorithm

HOLOGIC®

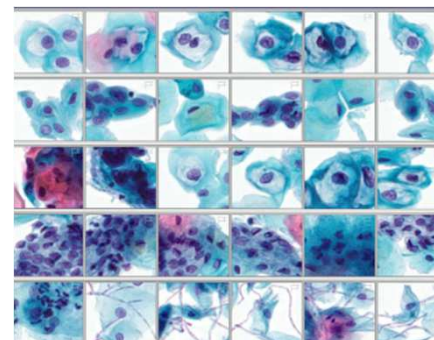


The new artificial intelligence algorithm identifies the most diagnostically relevant cells on ThinPrep® Pap test slides, designed to accurately and efficiently narrowing thousands of cells down to a single AI-generated gallery.¹ The gallery contains all the information needed to reach a result.

Tens of thousands
of cells per slide ^{2,3}



One AI-generated gallery
of diagnostically relevant cells



1. Digital Diagnostics Review Station Manual MAN-06184-001. Hologic, Inc; 202
2. ThinPrep 2000: MAN-06366-001
3. Hutchinson ML Isenstein LM, Goodman A, et al. Homogeneous sampling accounts for the increased diagnostic accuracy using the ThinPrep Processor. Am J Clin Pathol 1994 Feb;101(2):215-9

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Diagnostic Solutions

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Genius Digital Diagnostics System*

Review station

Powerful case viewer combines the clarity of a microscope with the simplicity of a point and click interface.¹

Digital case review promises to enhance the experience for labs by improving workflow and accelerating review time.²



1. Digital Diagnostics Review Station Manual MAN-06184-001. Hologic, Inc; 2020.
2. Khalbuss WE, Pantanowitz L, Parwani AV. Digital imaging in cytopathology. Patholog Res Int. 2011;2011:264683. doi:10.4061/2011/264683

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Diagnostic Solutions

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Genius Digital Diagnostics System*

Review station



Viewer software features a gallery view for ThinPrep® Pap test cases, containing all the information necessary to interpret digital images.¹

Medical grade, 4K display with color calibration sensor provides consistent and standardised visualisation across locations.²

Flexible monitor viewing angles for ergonomic screening.



Interactive point and click interface with 40x zoom.

1. Digital Diagnostics Review Station Manual MAN-06184-001. Hologic, Inc; 2020.
2. Hologic Data on File Ref: GeniusDigitalDiagnosticsDataRev001

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Review Station Software

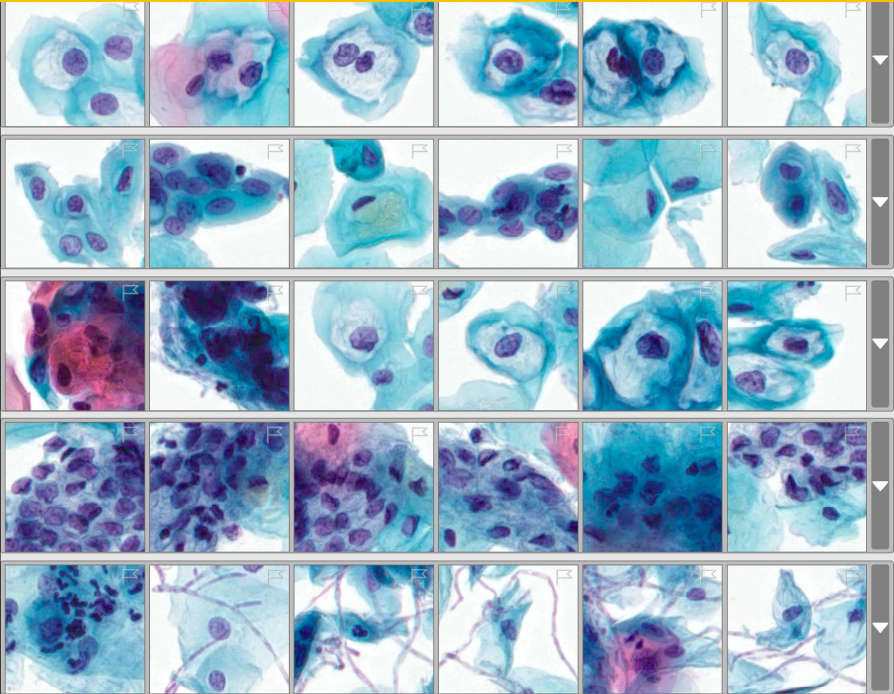
HOLOGIC®




57001579999028
Gyn

Approximate Cell Count: 75600

Algorithm Version: 1.0.12.0



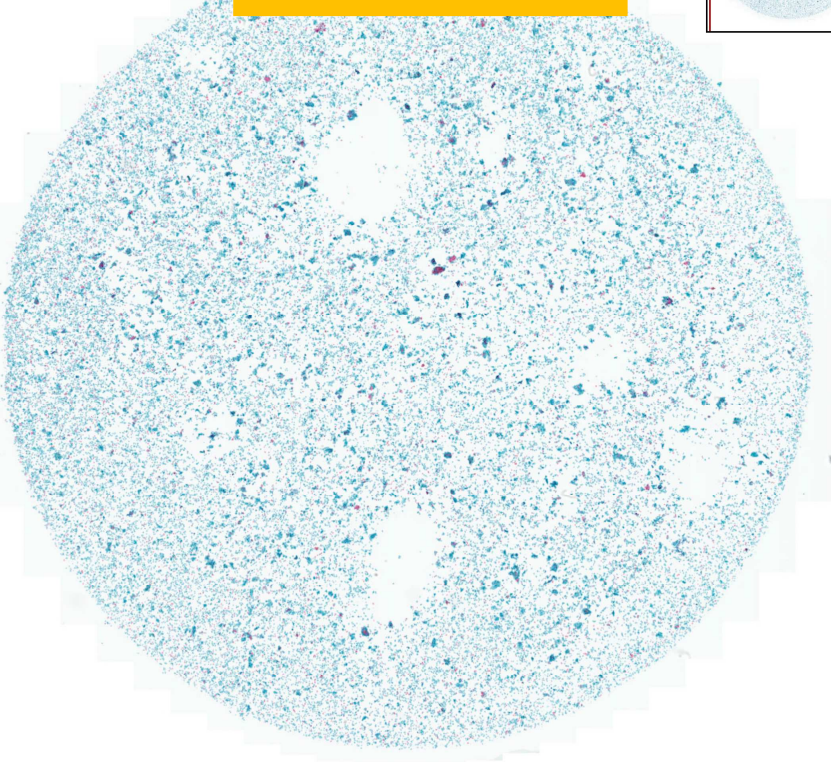
REVIEWING CASE AS
 Maria Hanne

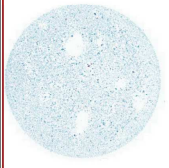
CANCEL







TAGS...

COMPLETE REVIEW

- Macro slide image
- Cell count
- Slide ID







Comments (0)

Review Station Software

HOLOGIC®

HOLOGIC
5700157
999026
57001579999028
 Gyn

REVIEWING CASE AS
 Maria Hanne

CANCEL TAGS... COMPLETE REVIEW

Approximate Cell Count: 75600
Algorithm Version: 1.0.12.0

AI-generated gallery of diagnostically relevant cells.

?

Comments (0)

Review Station Software

HOLOGIC®

HOLOGIC

5700157999026

5700157999028

Gyn

REVIEWING CASE AS

Maria Hanne

CANCEL

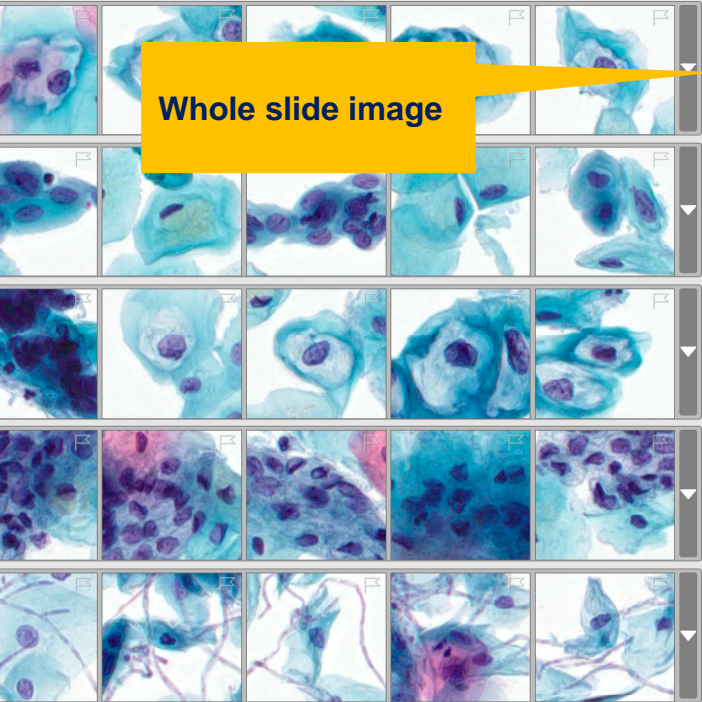
TAGS...

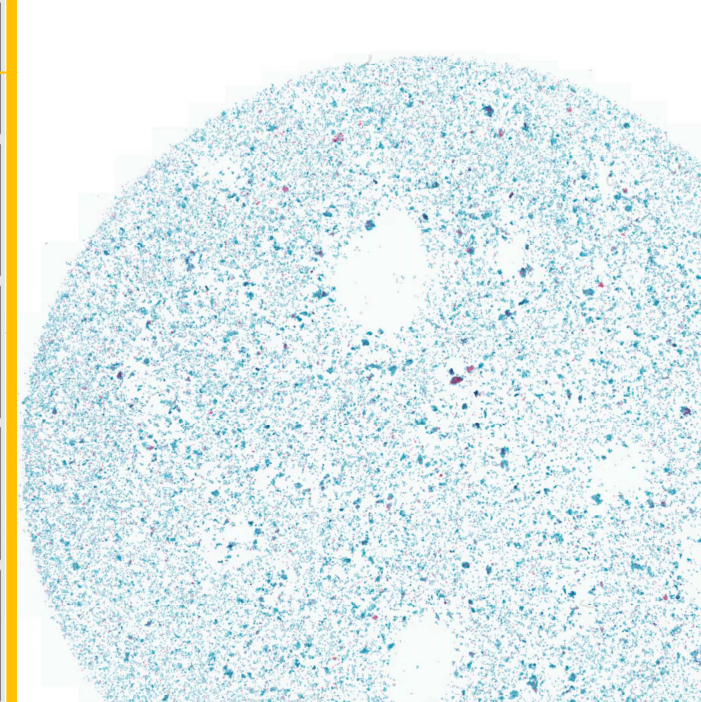
COMPLETE REVIEW

Approximate Cell Count: 75600

Algorithm Version: 1.0.12.0

Whole slide image





🔍

🔍

🔍

🔍

?

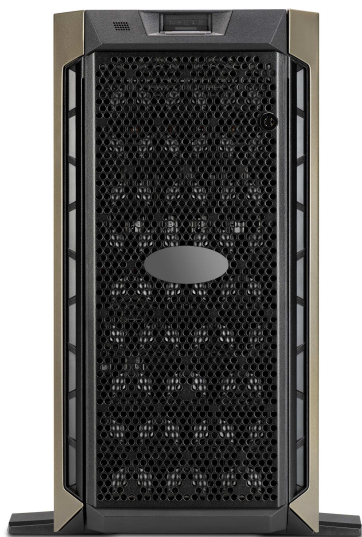
🖋️

Comments (0)

Genius Digital Diagnostics System*

Image Management Server (IMS)

HOLOGIC®



Central hub of Digital Diagnostics



Securely access cases across the system anytime, connecting pathologists with remote review so each patient can benefit from the collective knowledge of geographically dispersed experts.



Eliminate excessive slide transportation cost.
The IMS acts as the digital storage and distribution center, connecting both Digital Imagers and Review Stations for accelerated case movement.



Promotes a streamlined and balanced workflow.
Capable of receiving and serving cases after a slide is scanned, enabling cytotechnologists and pathologists to quickly access cases for responsive patient care.

1. Digital Diagnostics Image Management Server Dashboard User's Manual MAN-06795-001. Hologic, Inc; 2020.

* May not be available in all markets. Contact your local Hologic representative for availability in your country.

Scalable Network

Scalable and configurable platform designed to fit the present, and future, needs of your laboratory.

System components:



Digital Imager



Review Station

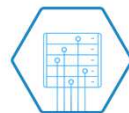
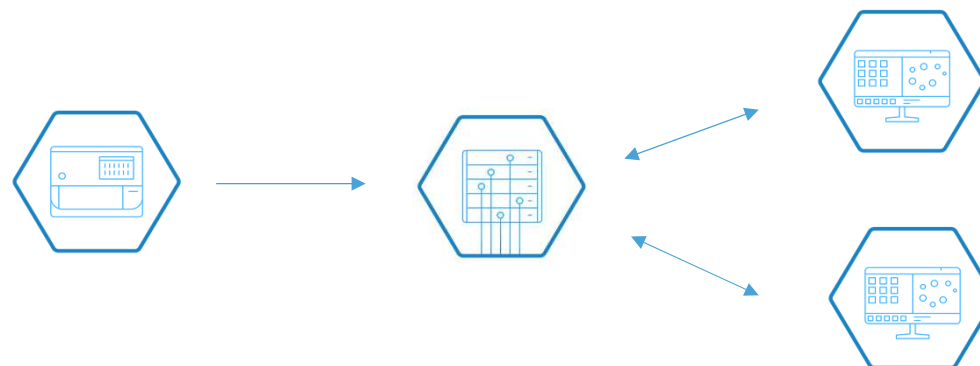


Image Management
Server

Streamlined configuration



Scalable Network

Scalable and configurable platform designed to fit the present, and future, needs of your laboratory.

System components:



Digital Imager



Review Station

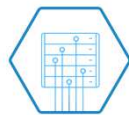
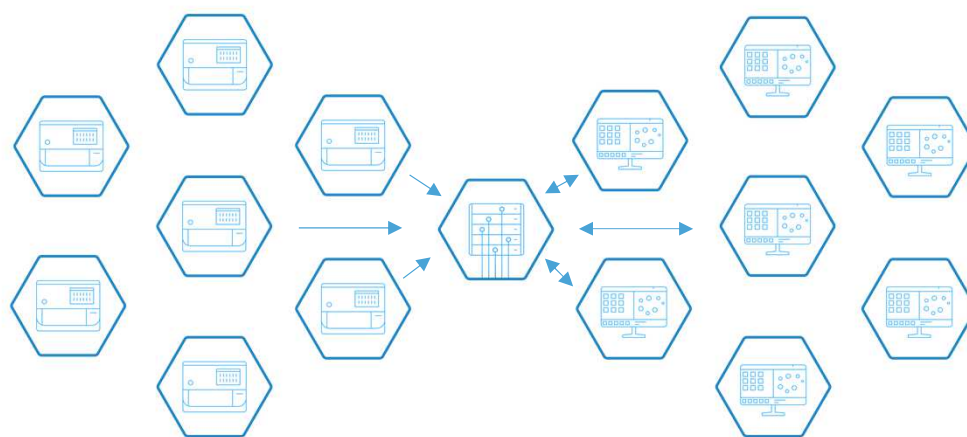


Image Management
Server

Expanded configuration with multiple Digital Imagers and Review Stations



Non-GYN Applications

Image ThinPrep® Non-Gyn slides and UroCyte® slides for a complete digital workflow



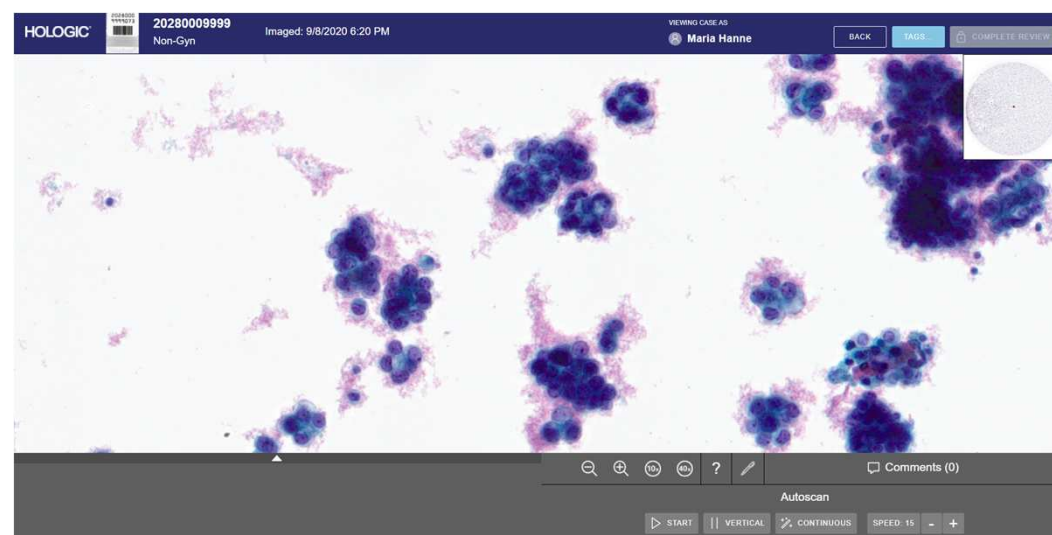
Quickly access cases of critical patients without waiting for physical slide transport.



Simplify collaboration across locations so each patient benefits from the collective expertise of the lab team.



Tag and bookmark interesting slides to ease case location and sharing for cytology education.¹



Genius Digital Diagnostics System*



Quality Experience

Empower cytology

A new advanced tool to help locate pre-cancerous and cancer cells on ThinPrep® Pap test digital images ¹

High throughput

Digital Imager processes up to 14 focal planes of a ThinPrep® slide in ~2.5 minutes ²

Quality digital images

Volumetric scan enables high-throughput combined with exceptional image quality ²



Promote Efficiency

Accelerate review time

Single gallery sign-out for ThinPrep® Pap test slides ¹

Easily locate more cells

Optional rows display 2X the number of objects of interest ¹

Dynamic collaboration

Digital workflow with remote case review



Save Time

No lost or broken slides

Easily access digital slides stored on the IMS

Zero transportation cost

Digital slides virtually transmitted between locations

Cases available in real time

Each slide available across the network after imaging



Enhance Workflow

Free-up staff

Load samples and walk away with 400 slide capacity ³

Prioritize STAT patients

Random access and stat carrier management ³

Easy Digital Imager loading

Ergonomic slide carriers accommodate stain racks ³

1. Digital Diagnostics Review Station Manual MAN-06184-001. Hologic, Inc; 2020.

2. Hologic Data on File Ref: GeniusDigitalDiagnosticsDataRev001

3. Digital Diagnostics Digital Imager MAN-06738-001. Hologic, Inc; 2020.

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Digital Cytology Education Website

Follow the cell and make a diagnosis. Beyond the Glass.

Enter a New Era of Learning

Fully interactive digital cytology educational platform

Review previously diagnosed cases. Enter your interpretation and receive instant feedback.

- Access 5 unknown cases per week
- Instant feedback with detailed description of diagnosis
- Library of known cases for reference
- 24 areas of interest and whole slide image available
- 10x and 40x viewing options



REGISTER TODAY

WWW.DIGITALCYTOLOGYEDUCATION.COM



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