

THE STORY OF (**RAPID**) DIGITAL PATHOLOGY TRANSFORMATION OF NYU LANGONE SURGICAL PATHOLOGY

Syed T. Hoda, M.D.

Clinical Professor
NYU Grossman School of Medicine
Director of Bone & Soft Tissue Pathology
Director of Digital Pathology, Clinical
NYU Langone Health
Director of Surgical Pathology
NYU Langone Orthopedic Hospital

09-2026 AAPA



DISCLOSURES: NONE

ANY COMPANIES MENTIONED
HERE ARE NOT ENDORSEMENTS
OF ANY KIND MERELY DOCUMENTATION
OF WORKFLOW FOR UNDERSTANDING OR REFERENCE.

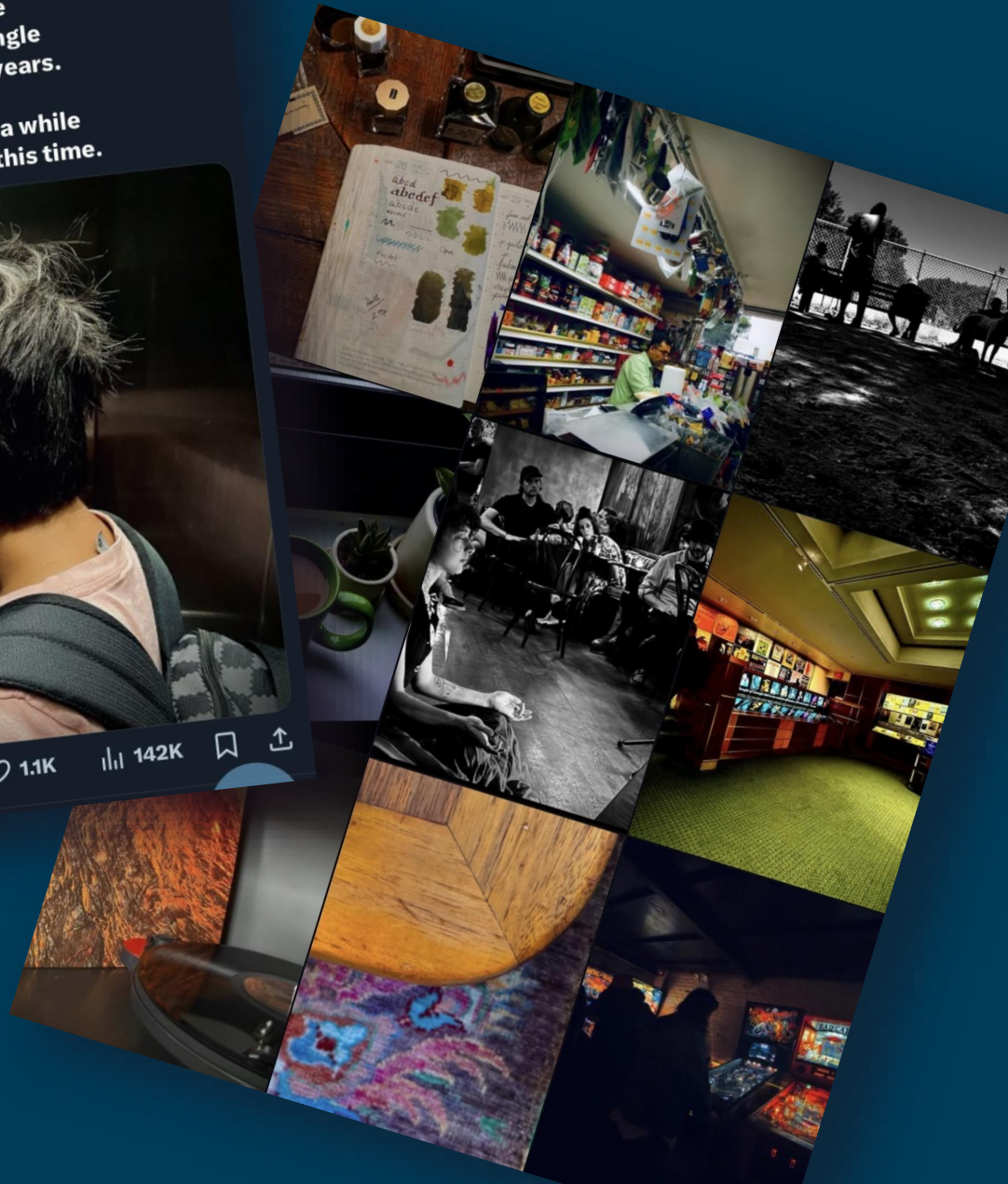




About myself.

syed t. hoda @01sth02 · 9/19/23
if I say no to 8am meetings
or ask my lectures to not be
scheduled at 8am or swap call
schedules It is because I have
dropped my 8yo off every single
day at school for the past 4 years.

they are only this young for a while
—so I will always prioritize this time.



7 Inpatient Facilities/Hospitals
320+ Outpatient sites
2000+ beds
11+ million outpatient visits
\$15.4 Billion (yearly revenue)

1st fully tuition FREE Medical School

24 Pathology Assistants + ~8PD
95+ Surgical Pathologists
50+ Residents + Fellows

220,000+ Pathology cases annually
2 million+ slides annually

Massively growing Cancer Center.



My
digital
pathology
journey

2009



Percentage of Surgical Pathology slides
That NYU Pathology had **digitized** as of:

September 17, 2024: 0%

September 17 2025: 100%

Percentage of Surgical Pathology cases
NYU Pathology signs out **ONLY** digitally (no microscope used)

September 17, 2024: 0%

September 17, 2025: ~95%



September 2025: Ended distribution of any glass slides to Pathologists—*unless requested!*

This transformation philosophically started with Pathology

**Was proposed to institutional leadership (Dean/CEO level)
Institutional leadership showed huge enthusiasm (!)**

**Moved with CONSTANT Pathology involvement and leadership
And massive IT-centric and institution support**

Project Management team assembled for Digital Pathology (IT-based team) (late 2023)

Conversations started in mid 2023, chose tech, carried into 2024 for actual planning

Team included Pathology leadership (Administrative, Pathologist chief/chair/champions)

Meeting planning, organization, topics, documentation (mid-late 2023)

Separate institutional policy and budgeting approvals meetings (mid-late 2023)

Evaluation of technologies from different companies (mid to late 2023)

Alignment on goals and objectives, reviewing regulatory issues (early to mid 2024)

Began the *change management* conversations (mid 2024- current)

Rollout of Digital Pathology (Fall 2024)

Spoke to many other institutions via zoom

And also were able to do a few site visits at:



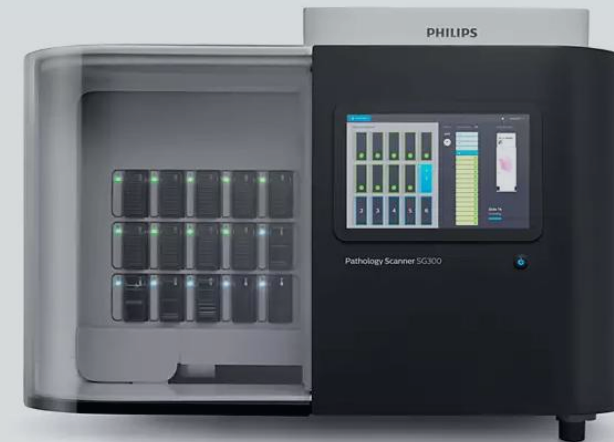
Nov 16, 2023

NYU Langone Health to adopt new Philips health technology solutions in multi-year partnership directed at patient safety, quality and outcomes

To unlock patient data for precision diagnosis and treatment, the new partnership includes digital pathology, clinical informatics, and innovative AI-enabled diagnostics with an enterprise monitoring as a service model

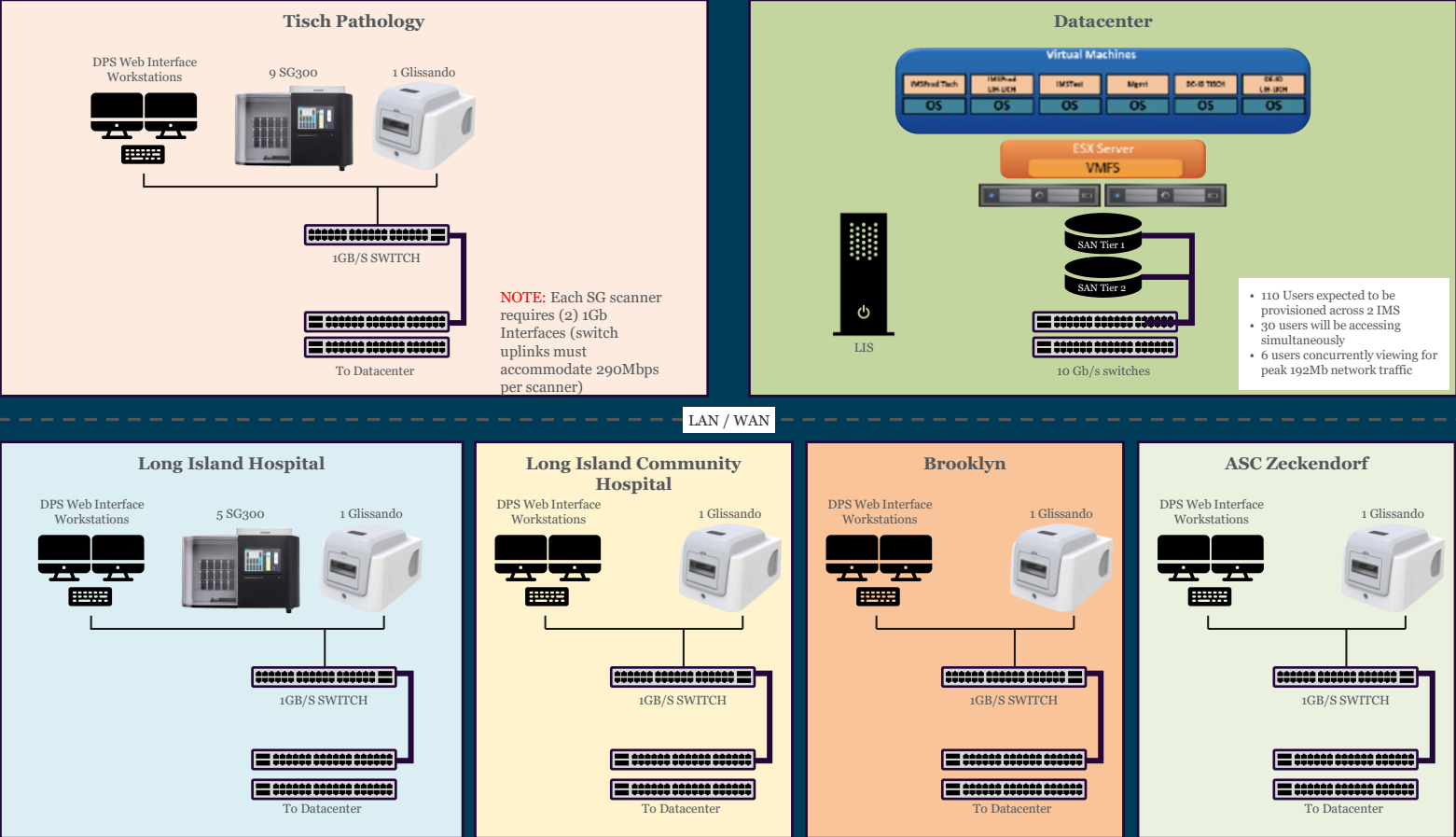
Amsterdam, the Netherlands, and New York, USA – [Royal Philips](#) (NYSE: PHG, AEX: PHIA) a global leader in health technology, and NYU Langone Health, the nation's top-ranked academic medical center, [1] today announced an 8-year strategic partnership valued up to USD 115 million and aimed at enhancing patient care through further innovation. With the new technologies, NYU Langone clinicians can collaborate in real-time, whether sharing pathology, imaging studies or patient data to support diagnostic confidence and tailor individualized care plans. This integrated, collaborative approach will serve as part of a drive to further enhance the patient experience through faster diagnosis and treatment, and improved outcomes.

Supported by Philips' innovation and leadership in health technology, NYU Langone's



Centralized PIPS conceptual design

All NYU Sites



TIER storage of data on AWS CLOUD

3-tiered system of Pathology slide data:

1. **On premises** server (up to 3 months)
2. **Cool storage** (cloud, 3-12 months)
3. **Cold storage** (cloud, >12 months)

REASONS:

- A. Lower cost as compared to keeping on premises (long-term)
- B. The enhanced ability to use slides in the cloud for other purposes: Research, AI/ML, Analytics, and more.
- C. Efficient outsourced retrieval of diagnostic material whenever needed by Pathologists with varying amounts of time (ranging from immediate to possibly next day)



THINGS WE ADDED ----STARTING IN MARCH 2024

15 Philips SG300 scanners

9 at NYU Tisch Manhattan

6 at NYU Long Island

+2 SG300 scanners in separate location in Manhattan solely for research use (non-clinical)

5 table top Glissando frozen section scanners (self-validated solution)

2 new scanning rooms built from scratch (next door to histology) for Scanners and staffing

Adding +1 scanner in Long Island (2026)



THINGS WE ADDED:

1 Digital Pathology Supervisor (all sites)

1 Digital Pathology QA manager (all sites)

26 Digital Pathology Coordinators (scanning techs, across 2 different sites) (*BRAND NEW job description in our lab*)

1 Digital Pathology (Clinical) Pathologist Director (*ME!*)

1 Digital Pathology (Research) Pathologist Director (*Dr. Sean Hacking*)

1 AP Informatics Pathologist Director (*Dr. Fang Zhou*)





We have been on EPIC Beaker (LIS) **since 2020!**

Abdomen

Case Type
LS
Case Status
Gross Description Done

Surgical Pathology

Resulting in current lab on behalf of interpreting lab: LICH PATHOLOGY

Sign out method:* [1]

Final Diagnosis [2]

asdfsdf

Block(s) for Future Testing* [3]

Title	Number
1. Digital (On-site)	1
3. Glass only (on site)	3
4. Not Applicable (gross only or no image)	4

Pre-digital EPIC beaker workflow

Outstanding List - AP My Cases - 1 out of 23

Views

Case Builder

Chart Review

Preview Case Report

Comm Log

Assign

Case Info

Remove

Refresh

Order Entry

Search

ID	QA ...	QA	Del...	T...	Name	Source	Test	Collected	Case Created	Status	Ord/Auth Pro
			✗		BeakerTest, Dmitry	Abdomen	Surgical Patho...	2/28/24	02/28 06:05	Addendum	
	1		✗		Clinical, Beaker	Bone marro...	Surgical Patho...		07/06 08:54	Signed Out (Addend...	
			✗		Two, Well	Stomach, M...	Surgical Patho...	6/27/24	06/27 10:56	Gross Done	
			✓		Beaker, Test One	Heart	Surgical Patho...	12/27/24	07/02 20:42	Gross Done	
			✗		Beaker, Test One	Bone marro...	Bone Marrow ...	2/2/24	02/02 13:58	Gross Done	
			✗		Beaker, Test Two	Autopsy, bo...	Autopsy Exam	3/16/21	03/16 15:19	Gross Done	
			✗		Beaker, Testnine	Aorta	Surgical Patho...	3/15/24	03/15 11:10	Gross Done	
			✗		Beaker, Testnine	Thyroid gland	GI Biopsy		05/09 10:11	Gross Done	
			✗		Clinical, Beaker	Abdomen	Surgical Patho...	1/29/24	01/29 09:59	Gross Done	
			✗		Test, Amanda	Breast, left, ...	Surgical Patho...	11/18/23	09/07 17:06	Gross Done	
			✗		Lemon, Lucy	Placenta (3r...	Surgical Patho...	10/13/23	10/13 10:07	Gross Done	
			✗		Test, Amanda	Abdomen	Surgical Patho...		06/13 15:21	Gross Done	
	1		✓		Beaker, Test One	Bone marrow	Cytogenetics	4/7/21	04/07 15:22	Gross Done	

D...	S...	O...	ID	Name	Assigned ...	Collecti...	Status	Source	Sub...	P...	T...	G...	Q...	R...	Bl...	S(t...	S(c...	Case Note...	Resident	Fellow	Ord/...	F...
✓	📄	🔍		Value, Demo Test	8/15/2024 1:13 PM	8/15/24	Gross Done	Neck, left	He...	💡				⬆️	1	1	1	FZ-call surgeon	Resident Pathol... MD		MD	
✗	🟡	🔍		Threeh... Clincl...	11/6/2024 3:36 PM	10/24/24	Gross Done	Soft tissue,	GU Major				🔴		2	5	4				Att... P Nyu	❄️

Customized current digital EPIC beaker workflow

SnapshotFormsCodingQA

SummaryROTTCCRXTracking

Launch Images

Open images for: NYU PHILIPS DIGITAL PATHOLOGYClose images

Digital Slides

A1-1 Level 1 H&EView

A1-2 IgG4View

A1-3 CD138View

A1-4 Level 2 H&EView

A1-5 AE1/AE3 StainView

A1-6 Unstained Slides (routine worklist)Slide Printed 1 day ago

A1-7 Level 3 H&EView

A1-8 Unstained Slides (routine worklist)Slide Printed 1 day ago

A1-9 Unstained Slides (routine worklist)Slide Printed 1 day ago

A1-10 Unstained Slides (routine worklist)Slide Printed 1 day ago

Tasks

Blocks: 1/1 Slides: 10/10

ID	Task	Ordered	Setup	F	N
A1	White Block	02/27/26 0902 by Josue	02/27/26 1033 by		

Cases

SlidesViewer options

Slides (1)

S14-23,53,696

Annotations

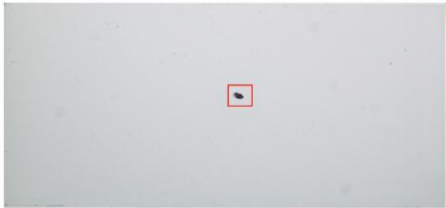
Overview

Slide

Bookmarks

Minimap

S14-23,53,696



A Coll: 6 Colon, Abscess Colon Colon biopsy 2/22/2020 12:00 8305 (CPT®) old: <0h 01m	Task		Note
	✓ A1	Green Block	
	✓ A1-1	Hematoxylin and E...	
	✓ A1-2	AE1/AE3 Stain	
	✓ A1-3	BRST-2 (GCDP-1...	
	✓ A1-4	Carbonic Anhydras...	
	✓ A1-5	CD163 (MRQ-26) (...)	
	✓ A1-6	Calcitonin (polyclon...	
	✓ A1-7	HPV High-Risk, E6/...	
	✓ A1-8	Positive RNA Contr...	
	✓ A1-9	Negative Control fo...	
	A1-10	Legacy Scan (digit...	Scan all slides

Builder		Grossing	Intra-op
No specimen or block is selected.			
A Miscellaneous, Excision/Resection Adrenal gland, left 2/12/2025 13:18 88305 (CPT®)	Task		Note
	✓ A1	Green Block	
	✓ A1-1	Hematoxylin and E...	
	✓ A1-2	Iron Stain	
	A1-3	Pathologist Rescan..	A1-1, A1-2

Resection	✓	A1	Green Block	
	✓	A1-1	Hematoxylin and Eosin Stain	🔍
ous cyst,	✓	A1-2	ERG	🔍
	✓	A1-3	SOX-10 (brown)	🔍
	✓	A1-4	Factor XIIIa (AC-1A1) (Tisch)	🔍
		A1-5	Pathologist glass slides request	🔍
	✓	A2	Green Block	
	✓	A2-1	Hematoxylin and Eosin Stain	🔍

CURRENT RATE OF PATHOLOGISTS REQUESTING GLASS SLIDES

0.13%

Important considerations used during EPIC Beaker customization:

ALL the changes we have in Epic done are 100% geared towards GLASSLESS WORKFLOW.

- Hybrid (glass + digital) workflow was looked at as 'temporary' only.
- Residents/Fellows case assignments and previews
- Scanning room is now assigning all cases (HUGE!)

Frozen Section implementation:

Small table top scanners: 5 Glissando Tabletop Scanners (2 slides at a time)

**NOT under any FDA Guidance (unlike our WSI—which is an FDA approved setup)
*Self-validated***

Some site with NO logistical issues (Tisch)

Others with off-site frozen locations (Zeckendorff)

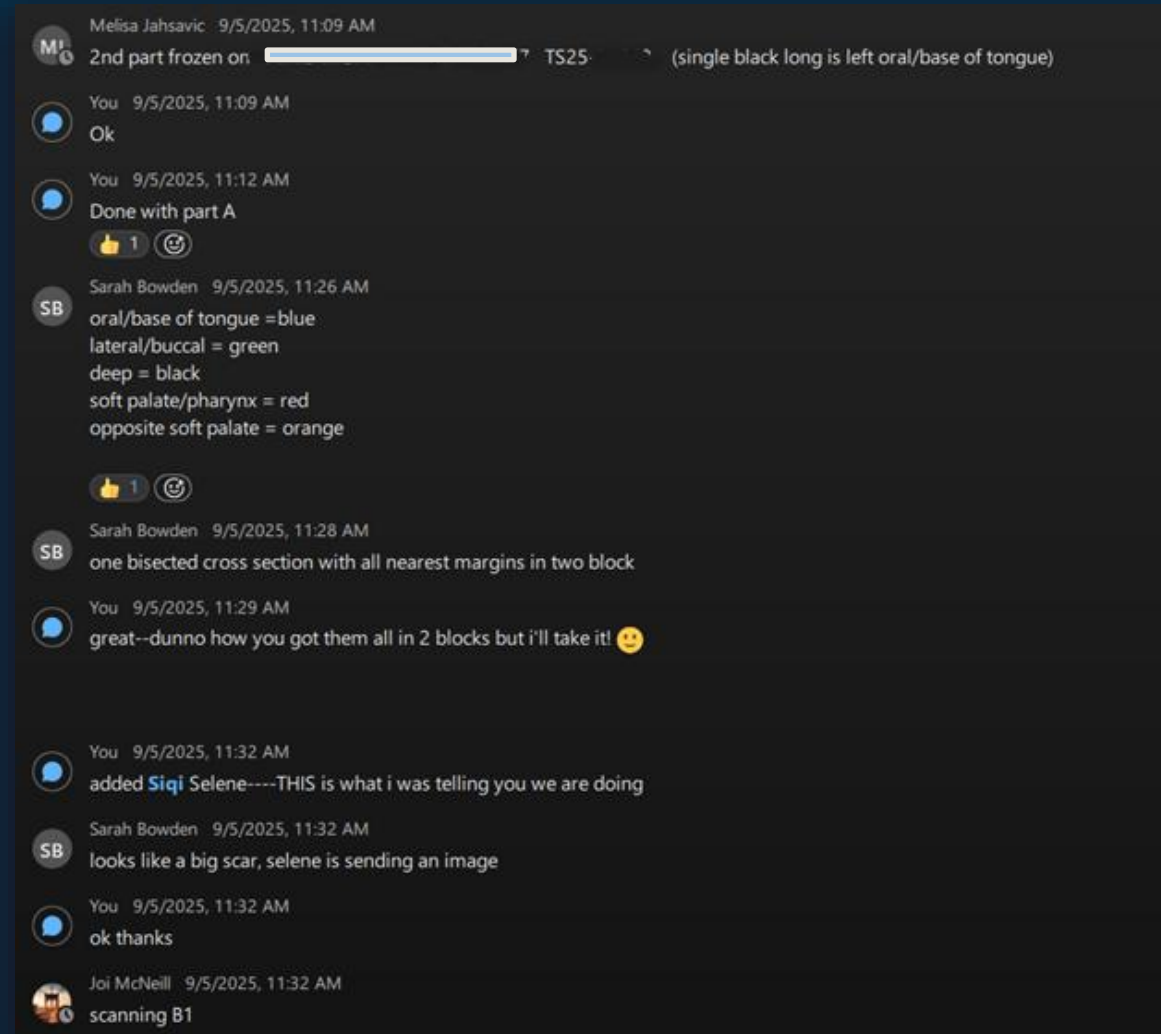
Challenges of remote frozen section workflow:

- ***Communication (see next page)***
- **Scanning time adds to turnaround time (has not been significant thus far)**
- **Extra work for Pathology Assistant/Grossing tech/Resident on frozen sections**
- **Scanner is not as robust as our Whole Slide Imaging system**



Remote frozen communication?
(Instead of excessive phone calls)

WebEx chat



OTHER FROZEN SECTION CONSIDERATIONS:

WHO IS THERE? PA? RESIDENT/FELLOW?

DOES THE SURGEON COME TO THE AREA? VIDEO CHAT? OFFICE?

CAMERA FOR REVIEWING GROSS

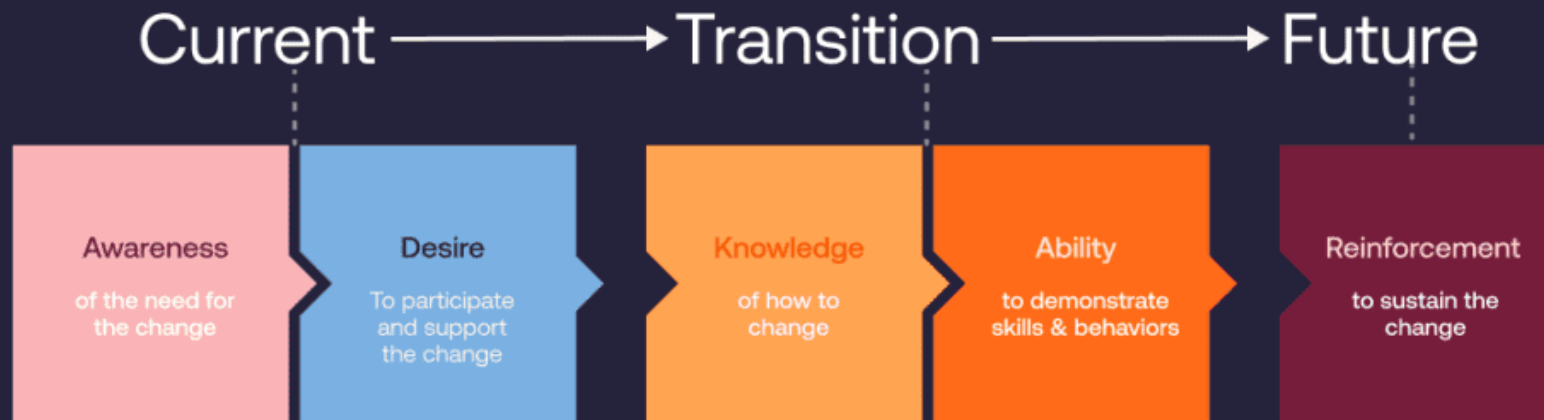
***IF* THERE IS A PROBLEM WITH SCANNER---BACKUP PLAN (???)**

CHANGE MANAGEMENT & ADOPTION.

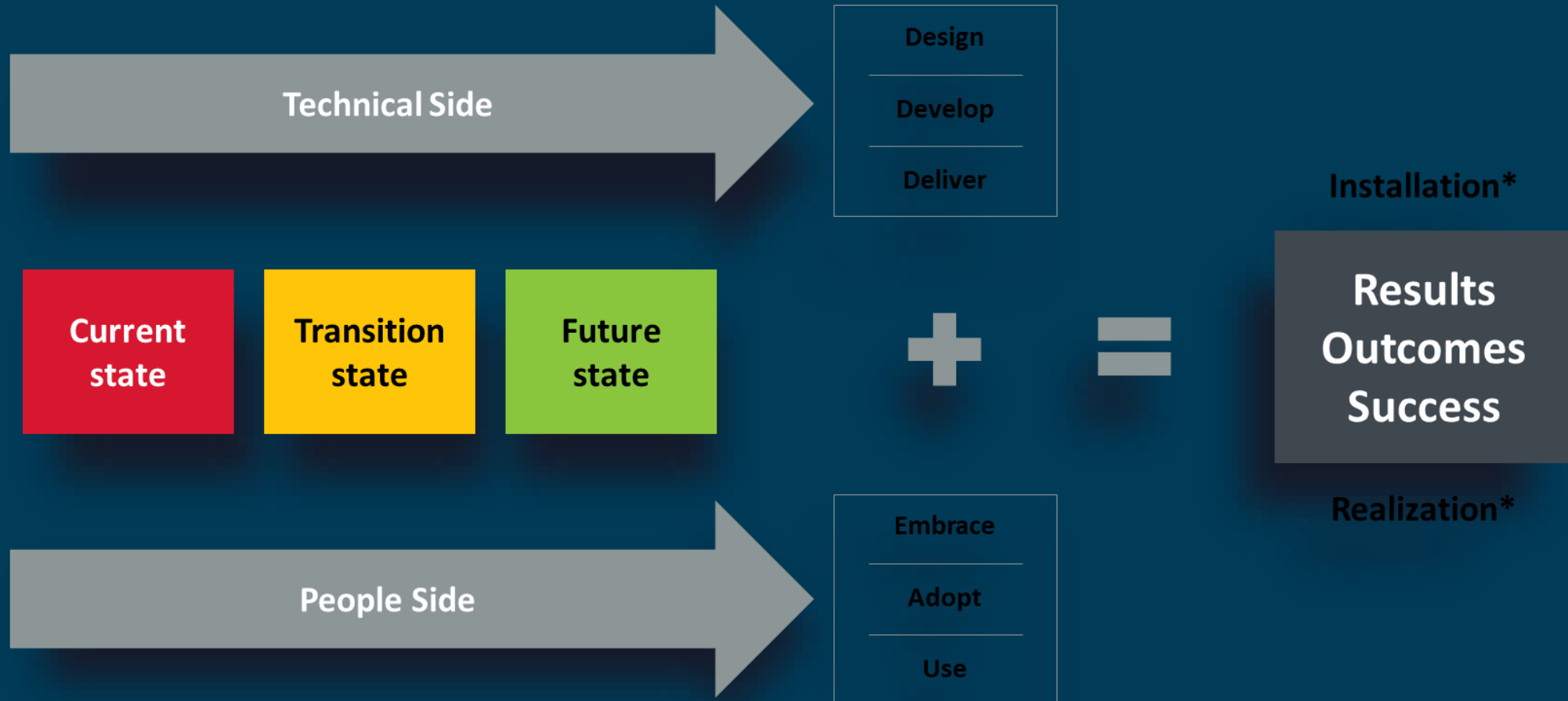
CHANGE MANAGEMENT

**YOU WON'T APPRECIATE WHAT IT IS
UNTIL YOU APPRECIATE WHAT IT IS!**

What is ADKAR?



SUCCESSFUL CHANGE MANAGEMENT REQUIRES BOTH THE TECHNICAL AND PEOPLE SIDES



* Daryl Conner

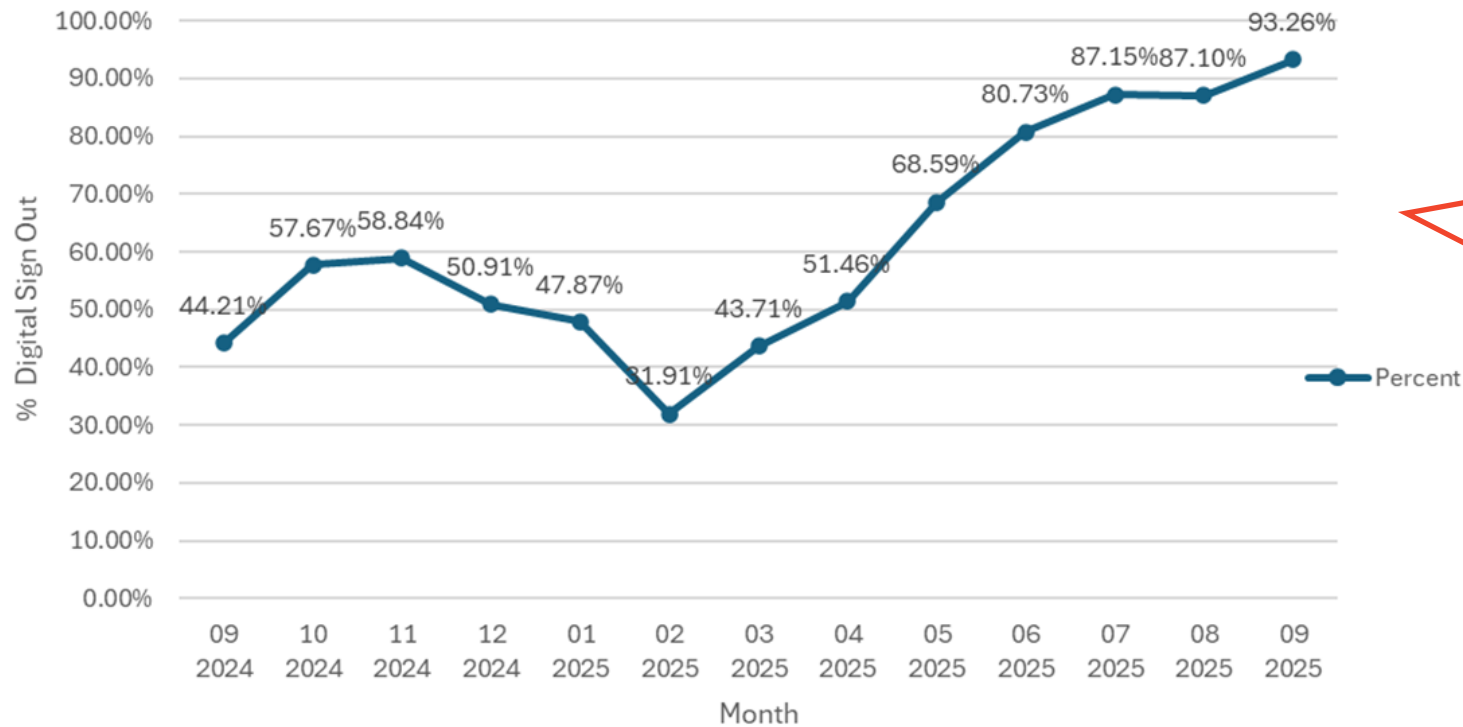
Peripherals options (open supply available to all users)

Feature	Traditional Keyboard and mouse	3D Connexion Keyboard and trackball mouse	SpaceMouse Pro	Wacom Intuos Pro	Game Controller
Programmable keys	No	Yes	Yes	Yes	Yes
Draw annotations	Yes	Yes	No (activate yes)	Yes	Possible
Smooth/clickless pan	Yes	Yes	Maybe	Yes	Yes
Use for other applications	Yes	Yes	No	Yes	Yes
Touch sensitive	No	No	No	Yes	No
Images					



Site	Go-Live	Subspecialty
Manhattan	9/18/24	Bone/Soft Tissue
		FNA Cyto
		GU Biopsy
		GU Major
		Head/Neck
		Skin
		Thoracic/CV
	10/30/24	Neuro
	11/6/24	Autopsy
		Pediatric
	1/15/25	Breast biopsy
		Breast Major
	1/21/25	Hemepath
	1/28/25	GYN Biopsy
		GYN Major
		GYN Minor
		GYN Placenta
	2/4/25	Gastro Major
		GI Biopsy
		Liver
		PO GI Biopsy
Long Island	2/11/25	Autopsy
		Bone/Soft Tissue
		Hemepath
	2/18/25	Neuro
	2/25/25	Gastro Major
		GI Biopsy
		Liver
	3/4/25	GU Biopsy
		GU Major
	3/11/25	GYN Biopsy
		GYN Major
		GYN Minor
		GYN Placenta
	3/18/25	FNA Cyto
		Head/Neck
		Thoracic/CV
	3/25/25	Breast biopsy
		Breast Major
		Skin

Percent Digital Sign Out From 9/18/2024 to 9/18/2025



Currently: 99.87% of
ALL NYU surgical
pathology cases
signed out without
use of a microscope

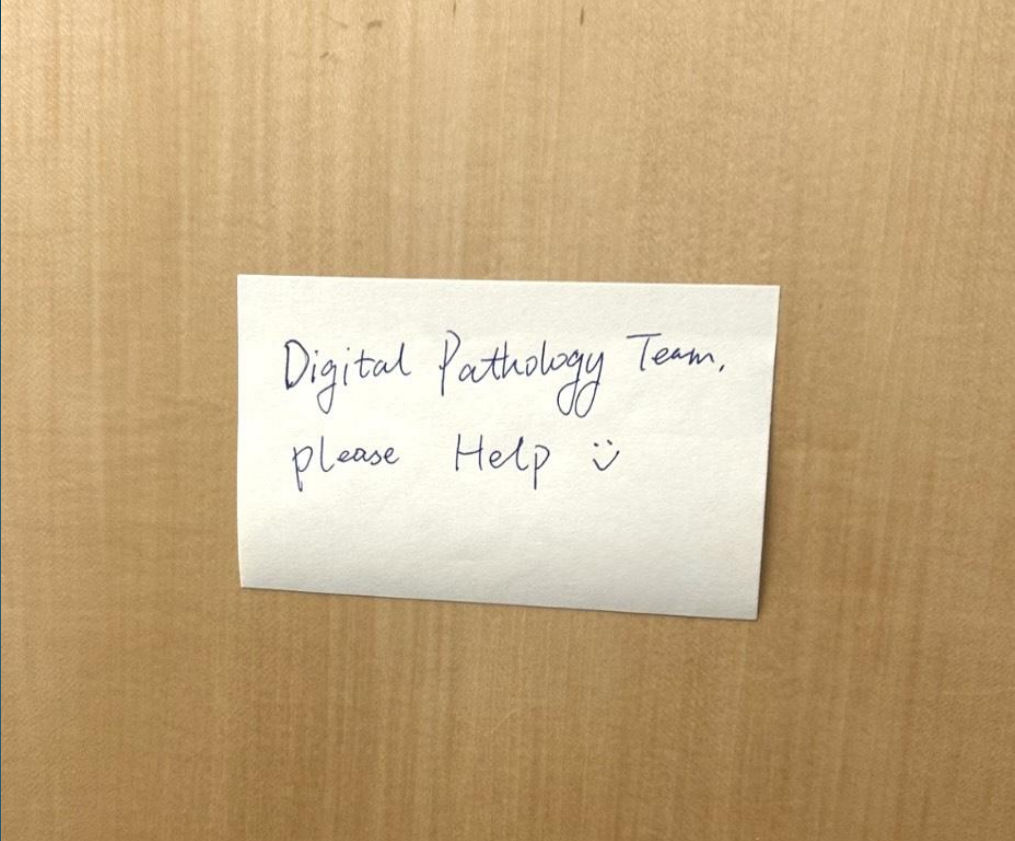
Assortment of People/Pathologists/PA personality types when it comes to **CHANGE!**

(based off real things said to me)

1. “I am so excited, when do we start? can I work from home?”
2. “Will we be able to do it? I am excited but nervous. Can I help?”
3. “I will do it if everyone else is doing it, but I’m in no rush”
4. “Why do we have to do this? Everything was fine before”
5. “Maybe my time has come to move over for younger people”
6. “I will not be using digital pathology”
7. “Digital Pathology is killing me” (!!!)



DIGITAL PATHOLOGY -
NO ENTRY



Digital Pathology Team,
please Help :)

What were pathologists worried about??

MANY, MANY, MANY THINGS!!!

- Morphology nuances
- 3-dimensional morphologic features
- Computer fatigue
- Pressure to adopt technology
- High Power Fields conversion
- Morphologic concordance
- Pixelation/quality
- Turnaround times
- Workflow issues/tracking cases
- “missing things”
- Missing the microscope (many people were afraid of this!!)
- Signing out with residents
- Residents not learning how to use a microscope
- Diagnostic criteria defined on the microscope
- *List goes on.....*

ALL of those pathologists above are currently happy signing out digitally!

NOT A SINGLE Pathologist has requested to return to a glass slide-workflow and nobody has left due to this transformation.

Residents and Fellows have been MASSIVELY Enthusiastic and have actually helped drive Attendings to better use of digital pathology.

What did I/we do to help all of these worries!?

Town Halls, Staff meetings, Director meetings = transparency

Invited guest speakers to Grand Rounds & other meetings (Digital Pathology)

Got interested people involved in the process (Attendings, Residents, Staff, Admin)

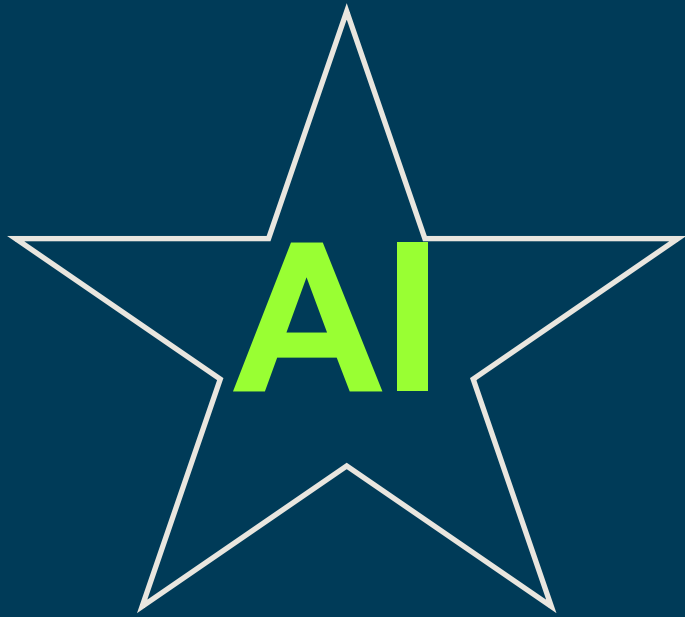
We contracted an ON-SITE Philips helper to help users with tutorials & learning (for 2 years!)

Private/Small Group/Section/Departmental discussions and meetings (MANY!!)

Held many WebEx/Zoom tutorials and Q&As, informal for anyone to join and ask Qs

But the MOST important thing for adoption:

WE DID THIS **TOGETHER** WITH A DEPARTMENTAL GOAL OF
MOVING OUR SPECIALTY AND OUR PRACTICE INTO THE
FUTURE—WITH CONFIDENCE & HIGH QUALITY.



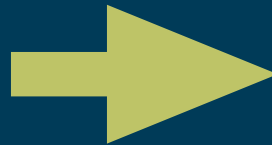
1. Tons and TONS of research, papers, innovations, ideas related to AI algorithms, identification, computational advances in the diagnosis, classification, predictions, and prognosis of disease.
2. HYPE: *'FOMO'*
3. Is there too much pointless AI being made?
4. How will Pathologists get involved & be engaged?
5. Companies will be changing/consolidating
6. Regulations are/will be changing

AI IS COMING FOR SURE & IS 'TRENDY' ---BUT IN ORDER TO GET IN ON THIS;

PATHOLOGISTS HAVE TO DEVELOP TRUST AND COMFORT IN A FULLY DIGITAL WORKFLOW FIRST



???



SO WHERE DOES *NYU* GO FROM HERE?

CLINICAL

- Remote (at-home) sign out PILOT started in October 2025
- By the end of September 2026: 75 (out of 95) Pathologists will have remote setups (IDENTICAL FDA-spec to work set-ups, supplied by NYU)
- Hemepath and Cytopath solutions in 2026/2027 (??)
- Refinement of digital Frozen Section workflow (*CURRENTLY*)
- Creating a digital only consultation service “*slide subway*”
- Evaluating AI products for clinical use***
- **CREATING AI tools for clinical use (see next page)**



RESEARCH

- **2 separate Philips SG300 RESEARCH scanners**
- 1 research digital pathology coordinator hired
- Working on NYU-developed AI tools for potential clinical use
- Engaging our Pathologist and Research faculty for IDEAS and Collaboration
- Evaluating possibilities of collaborations with companies
- *Designing Pathology governance over data its uses*
- ***DETAILS PENDING! STILL DESIGNING and REFINING!***

ADVICE TO PATHOLOGY DEPARTMENTS



This is a change necessary to modernize and change the entire specialty

ROI: this is a workflow, philosophical, infrastructural, data-driven and creating transformation which changes an entire specialty.

Largely NON-financial ROI that has potential for future ROI in spades.

**NO amount of current CPT code billing will recover the costs
But the DATA and opportunities in the future WILL.**

Recruitment: +++++

Med Student + Residency interest: +++++

Company/Collaboration interest: +++++

ADVICE TO PATHOLOGY DEPARTMENTS



Pathologists can be TOO QUIET (culturally amongst Doctors)
Pathology makes many, many diagnoses on a large number of patients.

Digital pathology raises the profile of the specialty and enhanced visibility in any clinical care or hospital setting

Be brave and bold to talk to hospital or business leadership to emphasize the importance of modernizing diagnostics for Patients.

PAs have a chance to provide leadership in this space!

*Be brave and bold to empower your Pathology colleagues to change!
Give attention to the conversations, cultural, and mindset changes*

IMPORTANT SELECT THANK YOUS (too many to list)

Dr. Robert Grossman (NYU Langone Dean/CEO, now retired)
Dr. Alec Kimmelman (NYU Langone Dean/CEO, current)

Dr. Nader Mherabi (NYU Langone Chief Information/Digital Officer)
Dr. Joan Cangiarella (Chief of Pathology Clinical Service)
Dr. Iannis Aifantis (Chair of Pathology)
Dr. Sean Hacking (Research Digital Pathology director)

Irfan Syed (MCIT))
Suzanne Howard (MCIT)
Boris Finkelstein (MCIT)
Casey Schaaf (Change Management lead)
Ruchit Shah (MCIT support for everything)
ENTIRE MCIT Pathology team
Chris Manz/Dmitry (MCIT EPIC/ECAS)
Digital Pathology project management (Lan, Jackie, etc)
Philips Digital Pathology team (Jennifer Samboy et al)
Nicole Tobar Rivera (Philips ONSITE trainer/support)

Dr. Fang Zhou (Epic Beaker Pathologist mastermind)
Dr. Nick Frazzette (Resident liaison for digital pathology)
Sau Wong (Digital Pathology supervisor)
Rui Soares (AP Lab supervisor)
Charlie Fernandez-Perez (PA/Gross Room Manager)
Diana Pierce/Max Grovenburg (PA Leads)
Christina Baranetsky (AP senior admin)
Shanna Guercio (Digital pathology QA)
Digital Pathology coordinators

My 11 year-old son for giving ME reality checks over the past year!
My excessive vinyl record collection for letting me escape freely!

THANK YOU!

syed.hoda@nyulangone.org

LinkedIn



X/Tw

