Whole Slide Scanning Basic Concepts

- WSI can be : brightfield, fluorescent, and multispectral or a combination of these models.
- Focusing Methods vary from focusing every individual tile or focusing on selected tiles to using a series of focus points.
- Scanning can occur at multiple magnifications (20x, 40x)
- Quality of the capturing camera within a digital scanner will affect viewing resolution.
- Different scanner vary in their slide-loading capacity and scan time.

Whole Slide Scanning Recent Advances

- Recently, scanning processes incorporate continuous automatic refocusing processes, which has further increased the quality of scans.
- Tissue recognition features allowing automatic detection of the histology specimen via a low-magnification overview scan greatly increasing scanning efficiency.
- Better Optics and faster scanning times.

Whole Slide Scanning Basic Concepts

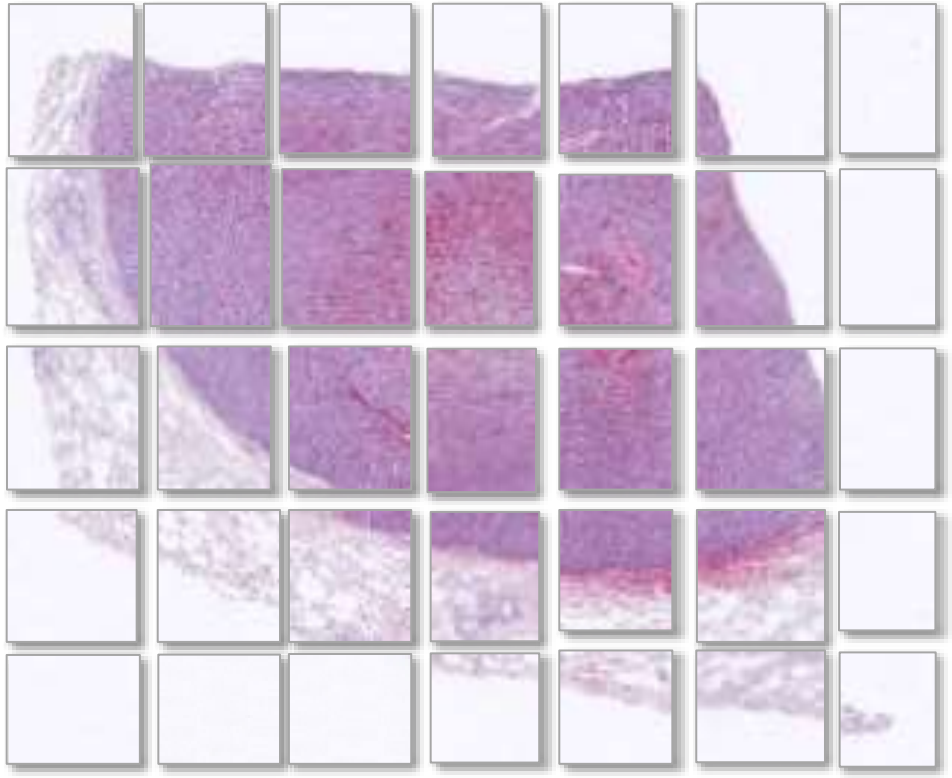
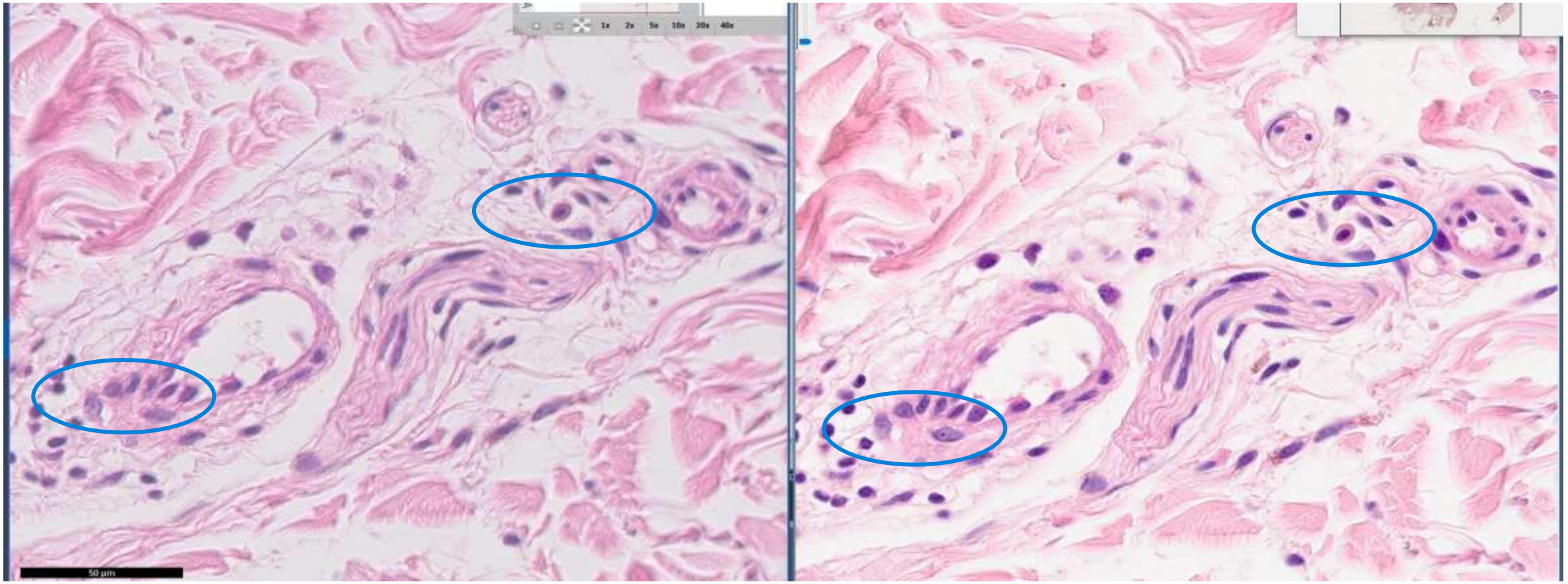


Image Quality



Considerations For Choosing A Scanner

- Fit for purpose (Nature of lab specimens : Capacity, Z axis, magnification)
- Quality of Images
- Ease of use
- Lab infra-structure and digital experience.
- DIACOM Readiness

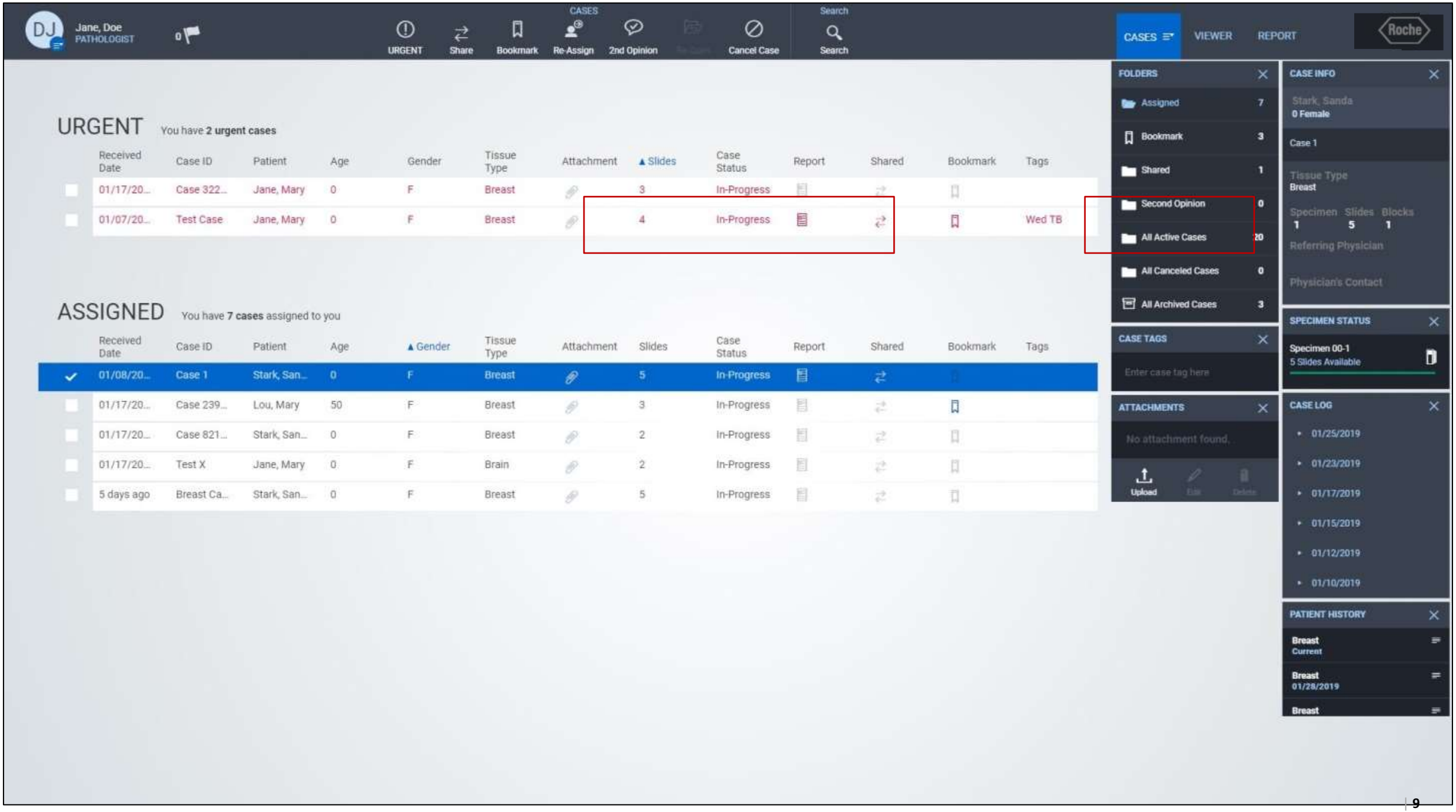
Digital Interface Advantages

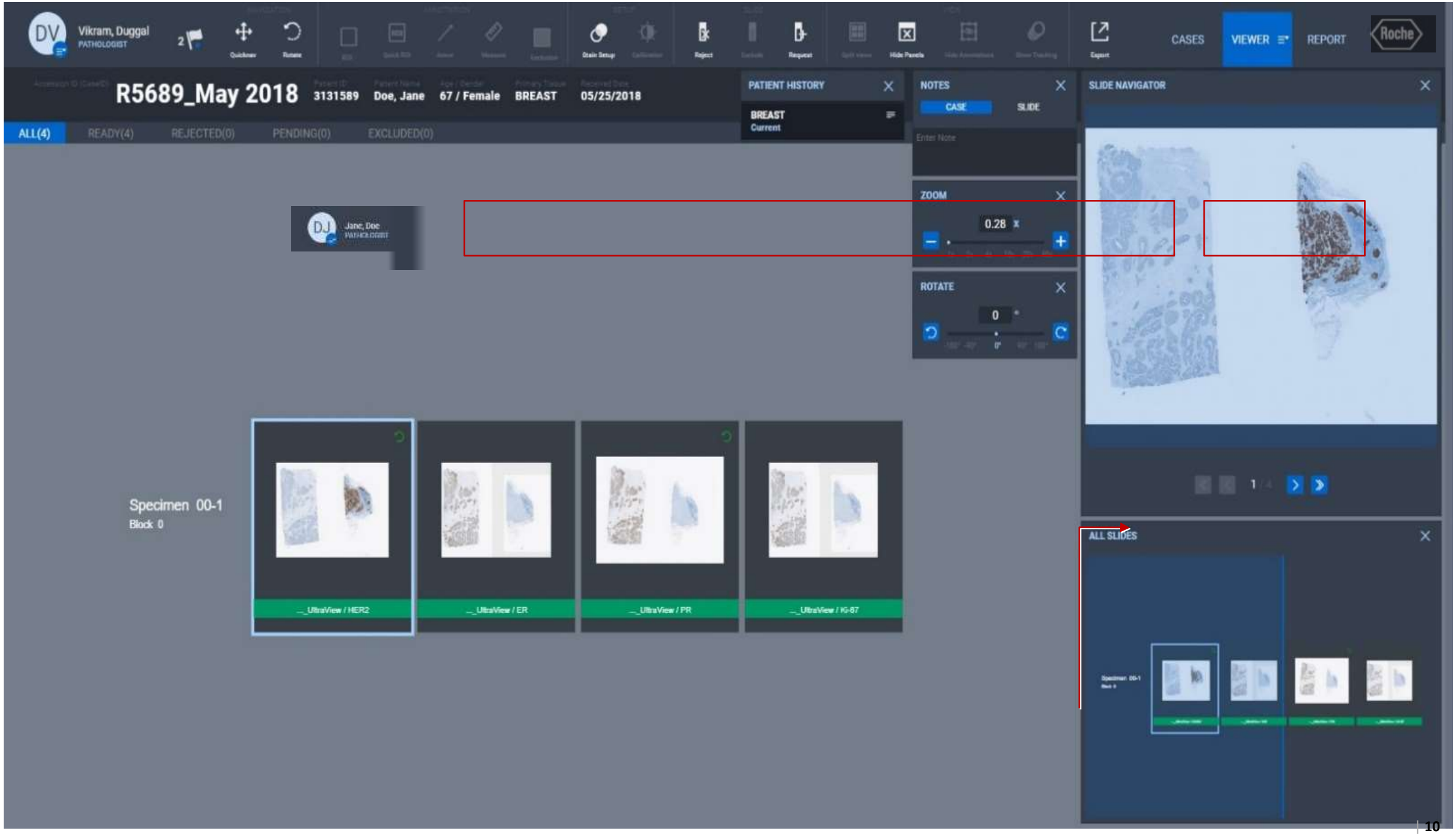
- Easy delivery (avoiding glass handling limitations)
- Remote access
- Digital annotation
- Rapid navigation/magnification

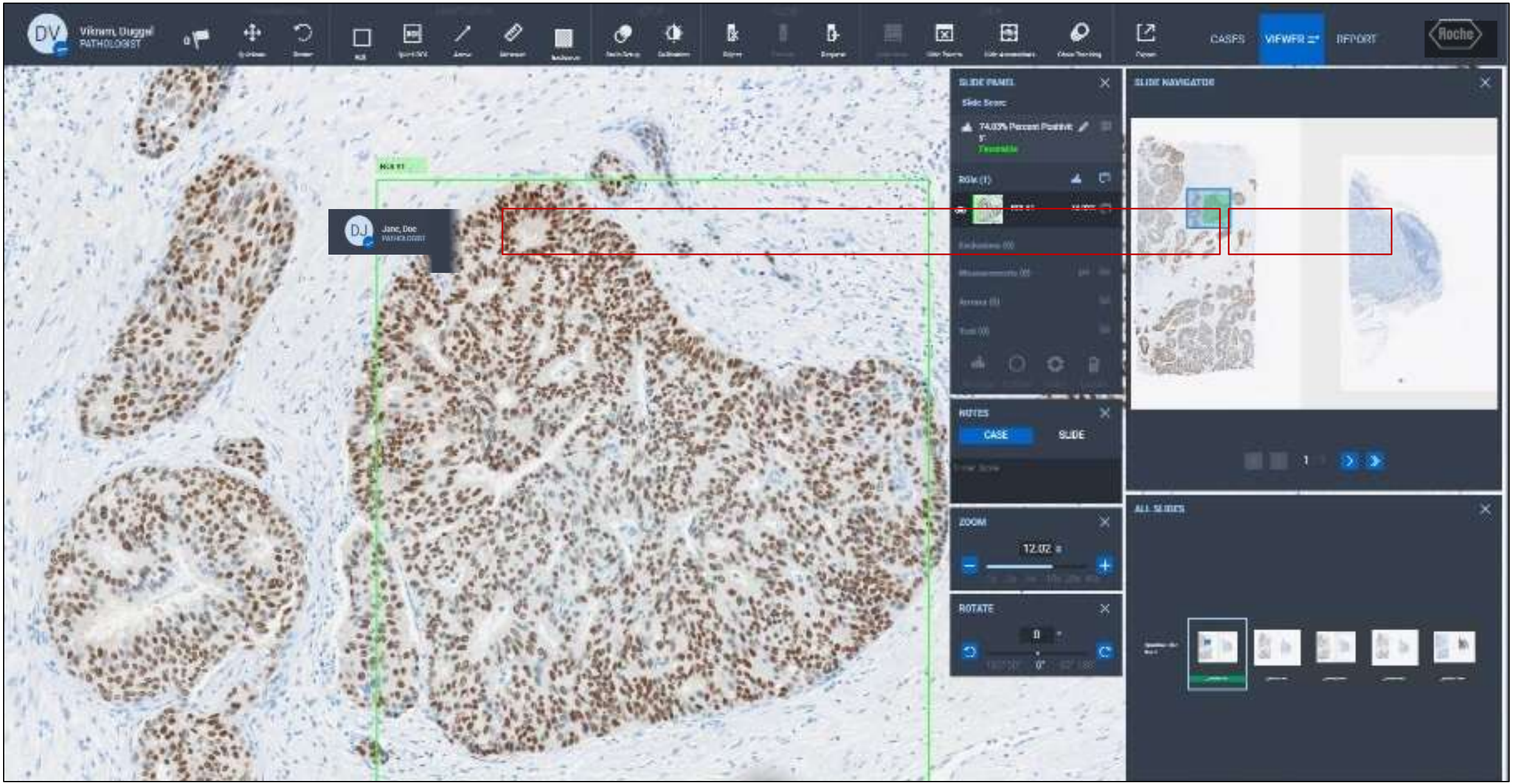
Digital Interface Advantages

- Take snap shots
- Export
- Computer-assisted viewing
- Enables Image Analysis applications
- **H&E and IHC (synched viewing)**

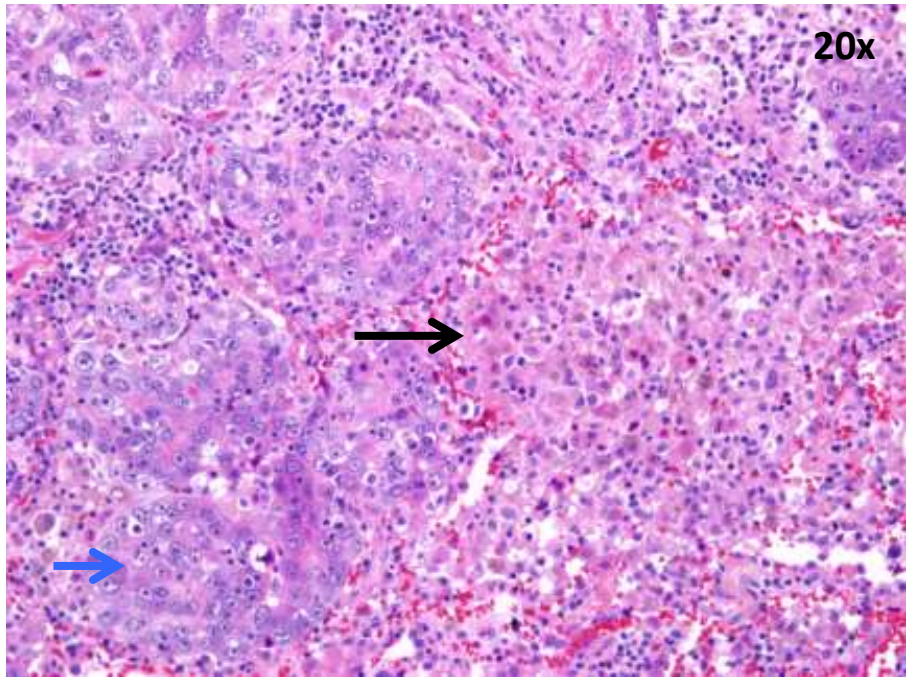

Roche
uPath IVD
user id
password
LOGIN


DJ
Jane, Doe
PATHOLOGIST
0
CASES
URGENT
Share
Bookmark
Re-Assign
2nd Opinion
Cancel Case
Search
Search
CASES
VIEWER
REPORT
Roche
URGENT
You have 2 urgent cases
Received Date
Case ID
Patient
Age
Gender
Tissue Type
Attachment
Slides
Case Status
Report
Shared
Bookmark
Tags
01/17/20...
Case 322...
Jane, Mary
0
F
Breast
3
In-Progress
01/07/20...
Test Case
Jane, Mary
0
F
Breast
4
In-Progress
Wed TB
ASSIGNED
You have 7 cases assigned to you
Received Date
Case ID
Patient
Age
Gender
Tissue Type
Attachment
Slides
Case Status
Report
Shared
Bookmark
Tags
01/08/20...
Case 1
Stark, San...
0
F
Breast
5
In-Progress
01/17/20...
Case 239...
Lou, Mary
50
F
Breast
3
In-Progress
01/17/20...
Case 821...
Stark, San...
0
F
Breast
2
In-Progress
01/17/20...
Test X
Jane, Mary
0
F
Brain
2
In-Progress
5 days ago
Breast Ca...
Stark, San...
0
F
Breast
5
In-Progress
FOLDERS
Assigned 7
Bookmark 3
Shared 1
Second Opinion 0
All Active Cases 20
All Canceled Cases 0
All Archived Cases 3
CASE TAGS
Enter case tag here
ATTACHMENTS
No attachment found.
Upload
Edit
Delete
CASE INFO
Stark, Sanda
0 Female
Case 1
Tissue Type
Breast
Specimen 1
Slides 5
Blocks 1
Referring Physician
Physician's Contact
SPECIMEN STATUS
Specimen 00-1
5 Slides Available
CASE LOG
01/25/2019
01/23/2019
01/17/2019
01/15/2019
01/12/2019
01/10/2019
PATIENT HISTORY
Breast
Current
Breast
01/28/2019
Breast

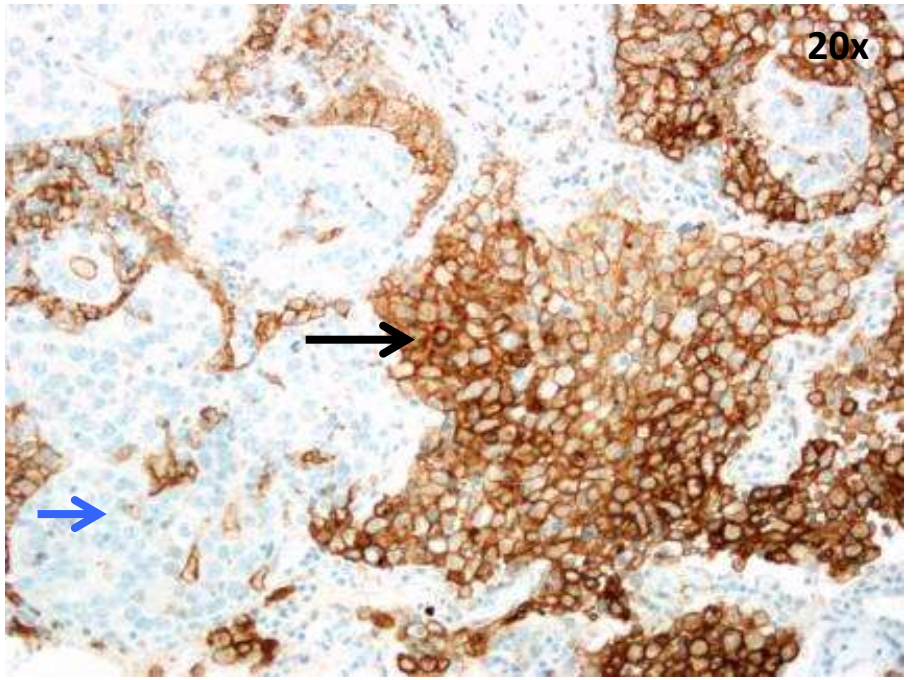

Vikram, Duggal
PATHOLOGIST
CASES
VIEWER
REPORT
Roche
R5689_May 2018
3131589
Doe, Jane
67 / Female
BREAST
05/25/2018
ALL(4)
READY(4)
REJECTED(0)
PENDING(0)
EXCLUDED(0)
PATIENT HISTORY
BREAST
Current
NOTES
CASE
SLIDE
Enter Note
ZOOM
0.28 x
ROTATE
0
SLIDE NAVIGATOR
1 / 4
Jane, Doe
Specimen 00-1
Block 0
_UltraView / HER2
_UltraView / ER
_UltraView / PR
_UltraView / Ki-67
ALL SLIDES


Vikram, Duggal
PATHOLOGIST
CASES
VIEWER
REPORT
Roche
Jane, Doe
SLIDE PANEL
Slide Score
RGN (1)
NOTES
CASE
SLIDE
SLIDE NAVIGATION
ZOOM
12.02
ROTATE
ALL SLIDES

Challenges with PD-L1 scoring



Tumor cells (blue arrow) adjacent to alveolar macrophages (black arrow)



Positive alveolar macrophage staining (black arrow) adjacent to PD-L1 negative tumor (blue arrow)

Advanced case data management

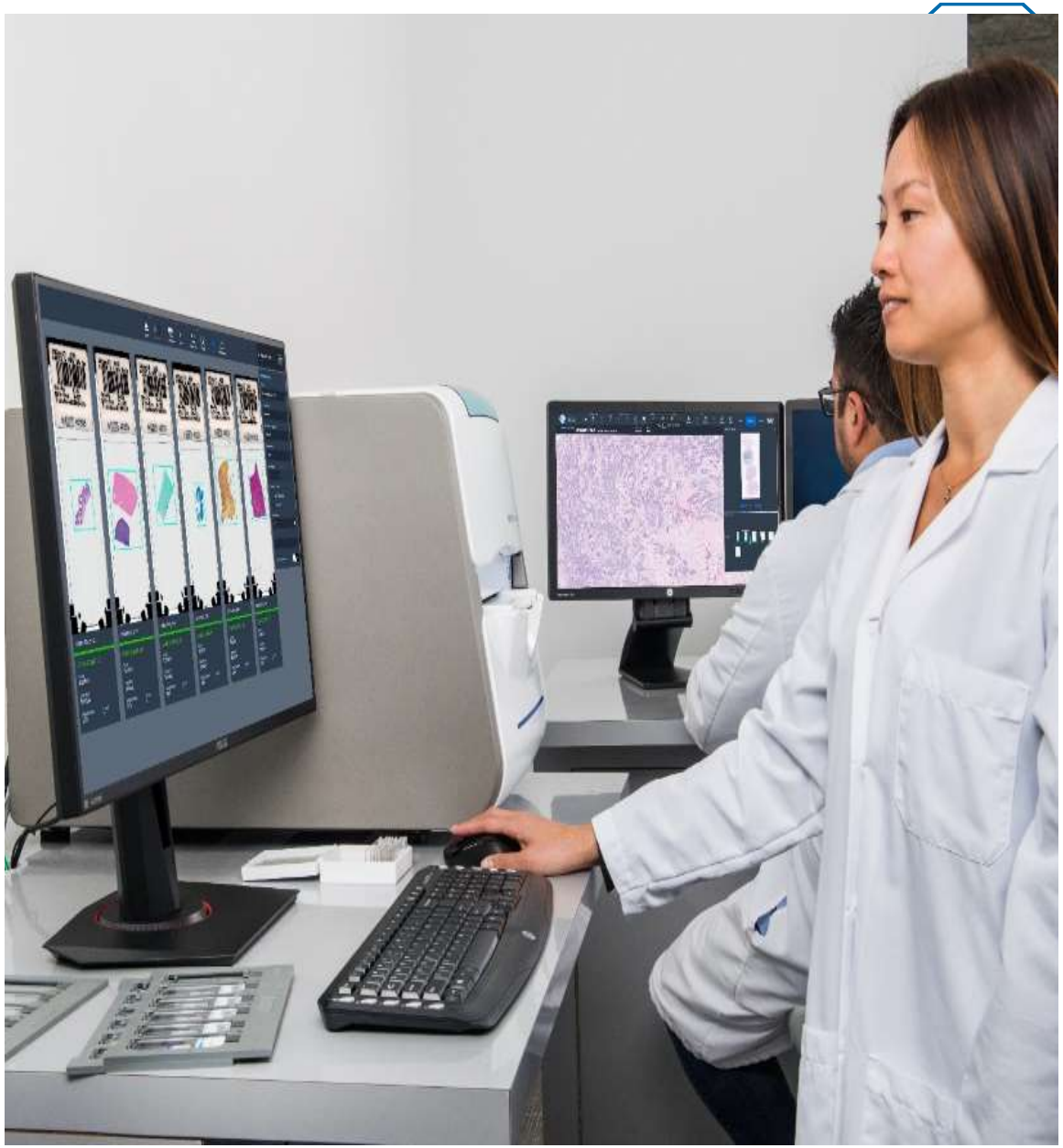
Create and manage cases, assignment and accessioning, patient information, physician information and case reassignment

Performing quality checks

Proactively reviewing slide images to maintain scanned image quality and manage lab throughput and efficiency

Collaboration with pathologists

Digitally collaboration for manage slide scan and rescan requests



Users and roles management

Create and manager users and their privileges within uPath software

Multi-site customize deployments

Manage multi-site or multi-client deployments

System rules and policies

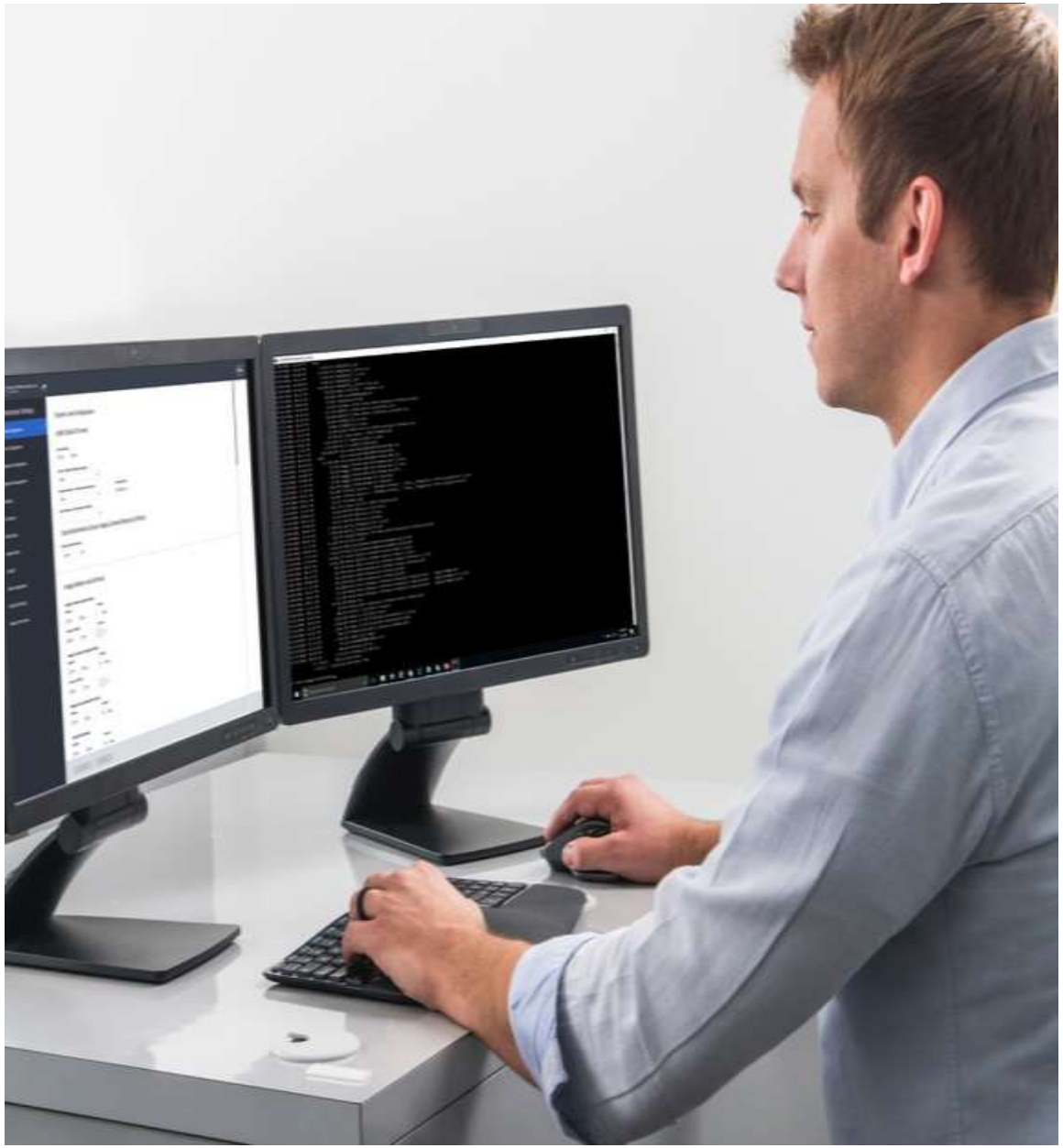
Manage system level configurations, image retention rules and password policies

Audit and track

Generate user/usage audit reports

Create customs configurations for pathologist

Create custom tissue types, preset comments and report templates and manage installed algorithms



Annotation of Whole Slide Images Using Touchscreen Technology

Jessica L. Baumann1 , Karl Garsha2 , Mike S. Flores 1 , Faith Ough 1 , Ehab A. ElGabry 1

Digital Interface Considerations

- Viewing software can be installed locally, or residing on network servers.
- Viewers packaged with algorithms
- A la carte fashion software services
- Downloading, processing and resolution
- Free open-source whole slide image viewers are available

Presentation overview

- Digital Pathology Historical Milestones
- Challenges of current practice model and the need for digital pathology solutions
- Definition of DP
- Digital pathology LAB infrastructure essentials
- Current and future digital pathology applications

Digital Pathology Current Applications

- Frozen consults
- Primary diagnosis
- Secondary consults using WSI
- Archiving
- Publications (links)
- Tumor Boards
- Education and Training

Education

- Undergraduate/allied health care professionals
- Postgraduate: Residency/Fellowship training
- Leveling expertise (rare cases / developing countries)
- Practicing pathologists (continued education / proficiency testing)
- Industry
- *Patient education*
- *Tracking tools to accelerate learning curve*
- Digital Anatomic Pathology Academy (DAPA) was recently announced by the DPA

Formalized training programs leveraging digital platforms

Universal Training programs for PDL1