Washington University School of Medicine's Gynecologic Oncology Biorepository

Open Specimen

OSCON22

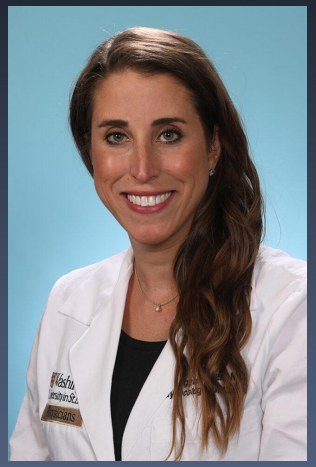
Rachel Abbott
September 19, 2022

BARNES-JEWISH Hospital BJC HealthCare | Washington University in St. Louis Physicians
NATIONAL LEADERS IN MEDICINE

Presentation Topics

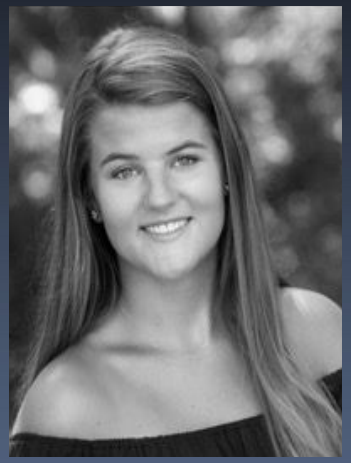
1. Introduce our Team
2. Explain What We Do
3. Describe our Workflow
4. Share how our lab uses Open Specimen
   - Labeling, Barcoding, Tracking, Reports
5. Briefly review Next Steps to enhance our processes
6. Suggest ideas for Improvement

Gynecologic Oncology Biorepository Team

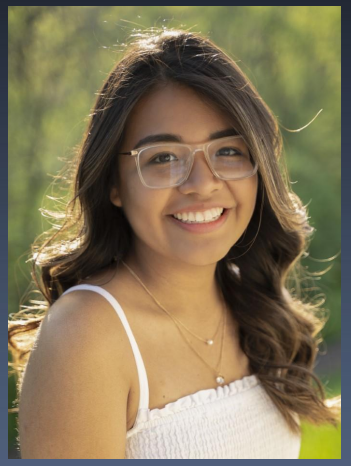


Mary M. Mullen, MD
Assistant Professor
Gynecologic Oncology

Rachel Abbott
Senior Clinical
Research Coordinator



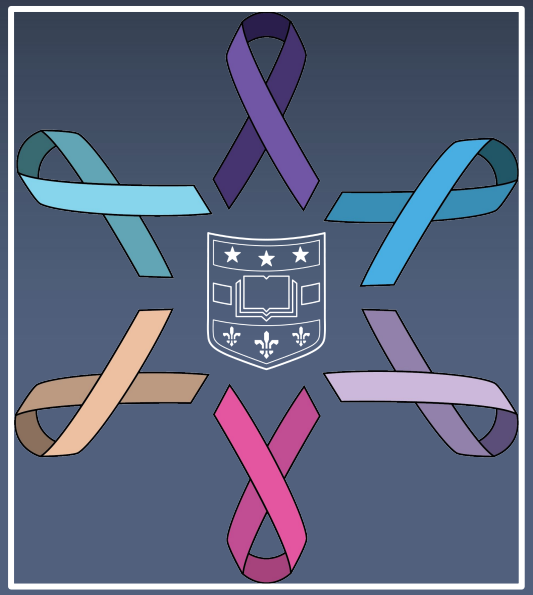
Olivia Graham
Clinical Research Technician



Jeimmy Rodriguez
Clinical Research Technician

GynOnc Biorepository Mission Statement

Our mission is to support clinical, translational and basic research focused on gynecologic malignancies through collecting, storing and distributing biospecimens for research purposes.

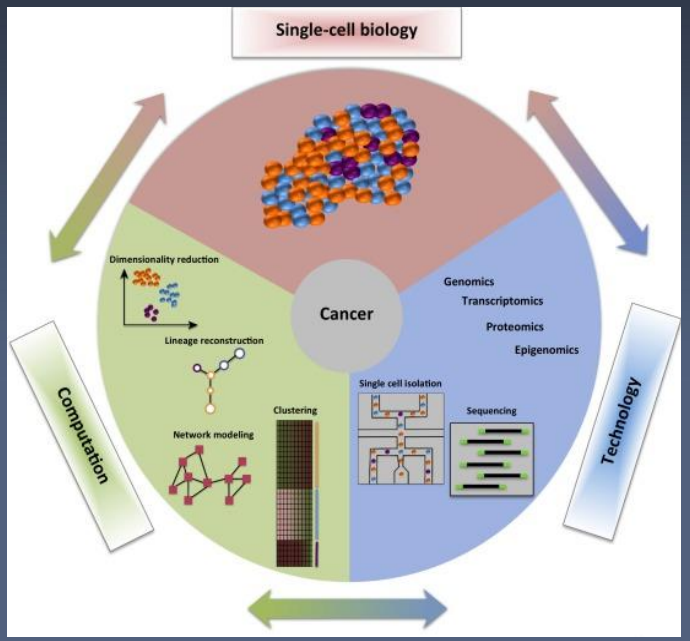


GynOnc Biorepository Services

- Standard clinical specimen processing

  Genomic Analysis
  Traditional & Single-Cell Transcriptomic Analysis
  Spatial Transcriptomic Analysis
  Proteomic Analysis
  Metabolomics Analysis
  Primary Tumor Cell Generation
  Serum Marker Analysis
  Germline Genomic Analysis
  Organoid Generation
  Circulating Tumor DNA/RNA Analysis

- Barcoded tracking of specimens
- Immediate and long-term storage
- Distribution of specimens
- Correlated clinical data

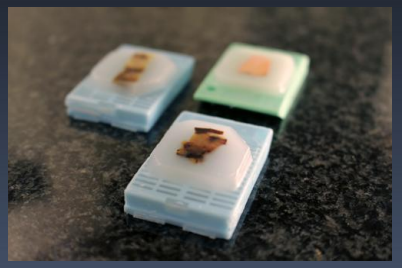


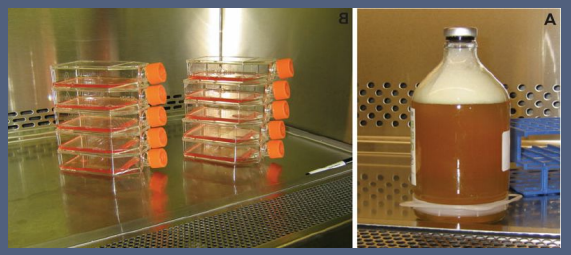
GynOnc Biorepository Workflow

- Candidate patients are identified on the GYNONC surgery schedule
- Consent is obtained from the patient for approval to collect specimens
- The patient is registered in REDCap which initiates a data push to Open Specimen (API)
- Tissue, blood & ascites are collected in the OR & processed
- Specimens are entered into Open Specimen for labeling & tracking
- Specimens are stored in the specified container and position

Specimen Collection Goals for 1 Surgery

1. Tissue / Flash Frozen (FF)
   - Primary tumor & 4 Mets
2. Tissue / Formalin-Fixed Paraffin-Embedded (FFPE)
   - Primary tumor & 4 Mets
     - H&E slides
3. Tissue / Optimal Cutting Temperature Embedded (OCT)
   - Primary tumor & 4 Mets
     - H&E slides
4. Tissue / Organoids
   - Primary tumor & Mets
5. Blood
   - Serum
   - Buffy Coat
   - Plasma
   - Cell-Free DNA
6. Ascites
   - Organoids
   - Primary Ovarian Cancer Cells (POVs)





Tracking Methods

- Framework for labeling & tracking
- Tools to create customizable queries - IMPERATIVE
- Create targeted pull lists
- Bulk specimen distribution – audit trail and automatic specimen quantity updates

OPENSPECIMEN
a krishagni product

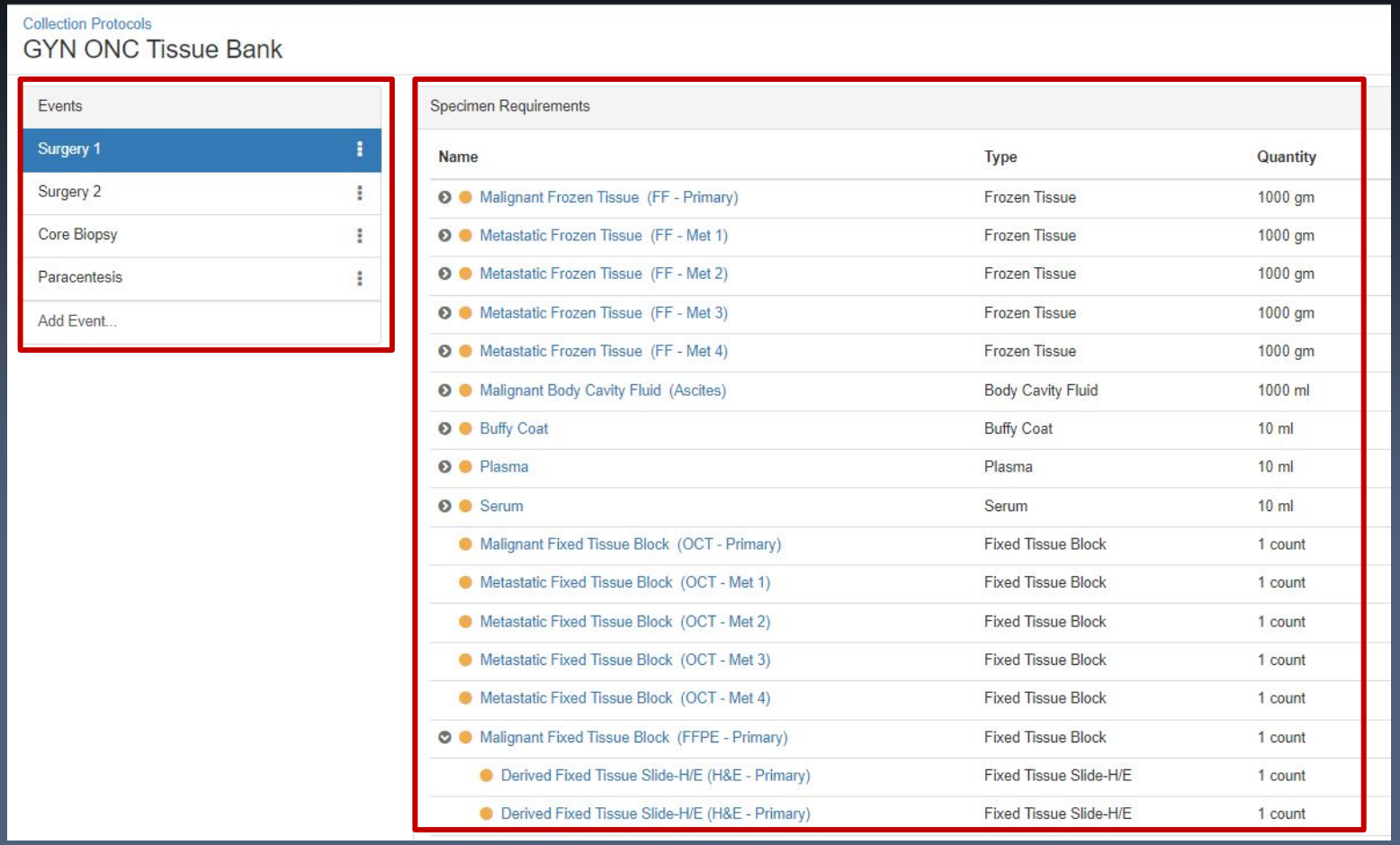
- Record a deep level of patient clinical data including medical history, pathology, chemotherapy, genetic mutations, and progression of disease

REDCap
Research Electronic Data Capture

How our lab uses Open Specimen

Two Initial Configuration Steps:

1) Collection Protocol



2) Establish Containers

Containers

Showing 6 records

+ Create | Types | Tasks | Import | Export | Help | Search

Name	Site	Created By	Dimension	Stored Specimens	Approximate Capacity	Occupied v/s Free
GYNONC Freezer 1	Gynecologic Oncology Tissue Bank	Lee Myrick	4 X 1	818	14,400	6 94%
GYNONC Freezer 2	Gynecologic Oncology Tissue Bank	Lee Myrick	4 X 1	1,269	58,320	98%
GYNONC Freezer 3	Gynecologic Oncology Tissue Bank	Lee Myrick	4 X 1	0	58,320	100%
GYNONC Freezer 4	Gynecologic Oncology Tissue Bank	Lee Myrick	4 X 1	1,002	58,320	98%
GYNONC Slide Box 1	Gynecologic Oncology Tissue Bank	Rachel Abbott	100 X 1	28	100	28% 72%
GYNONC FFPE Cabinet 1	Gynecologic Oncology Tissue Bank	Rachel Abbott	2 X 1	25	490	5 95%

Patient Registration: API Integration

REDCap
Patient Registration

Record Number	4920	
First Name	**Middle Initial**	**Last Name**
Jane	M	Test
MRN	200381763	
DOB	01-01-1960 Today M-D-Y	

Open Specimen
Automatic and nearly immediate data push including patient demographics and PPID

4920 (Jane M Test)

Edit | Add to Another Protocol | Anonymize | Delete

Registration Date	Sep 12, 2022
External Subject ID	Not Specified
Registration Site	Gynecologic Oncology Tissue Bank
PPID	4920
First Name	Jane
Middle Name	M
Last Name	Test

Birth Date	Jan 01, 1960
Social Security Number	Not Specified
Master Patient Index	Not Specified
Gender	Not Specified
Vital Status	Not Specified
Race	White
Ethnicity	Not Hispanic or Latino

Site	MRN
Gynecologic Oncology Tissue Bank	200381763

Specimen Registration

4920 (Jane M Test)

Edit | + Add to Another Protocol | Anonymize | Delete

Registration Date	Sep 12, 2022	Birth Date	Jan 01, 1960
External Subject ID	Not Specified	Social Security Number	Not Specified
Registration Site	Gynecologic Oncology Tissue Bank	Master Patient Index	Not Specified
PPID	4920	Gender	Not Specified
First Name	Jane	Vital Status	Not Specified
Middle Name	M	Race	White
Last Name	Test	Ethnicity	Not Hispanic or Latino

Site	MRN
Gynecologic Oncology Tissue Bank	200381763

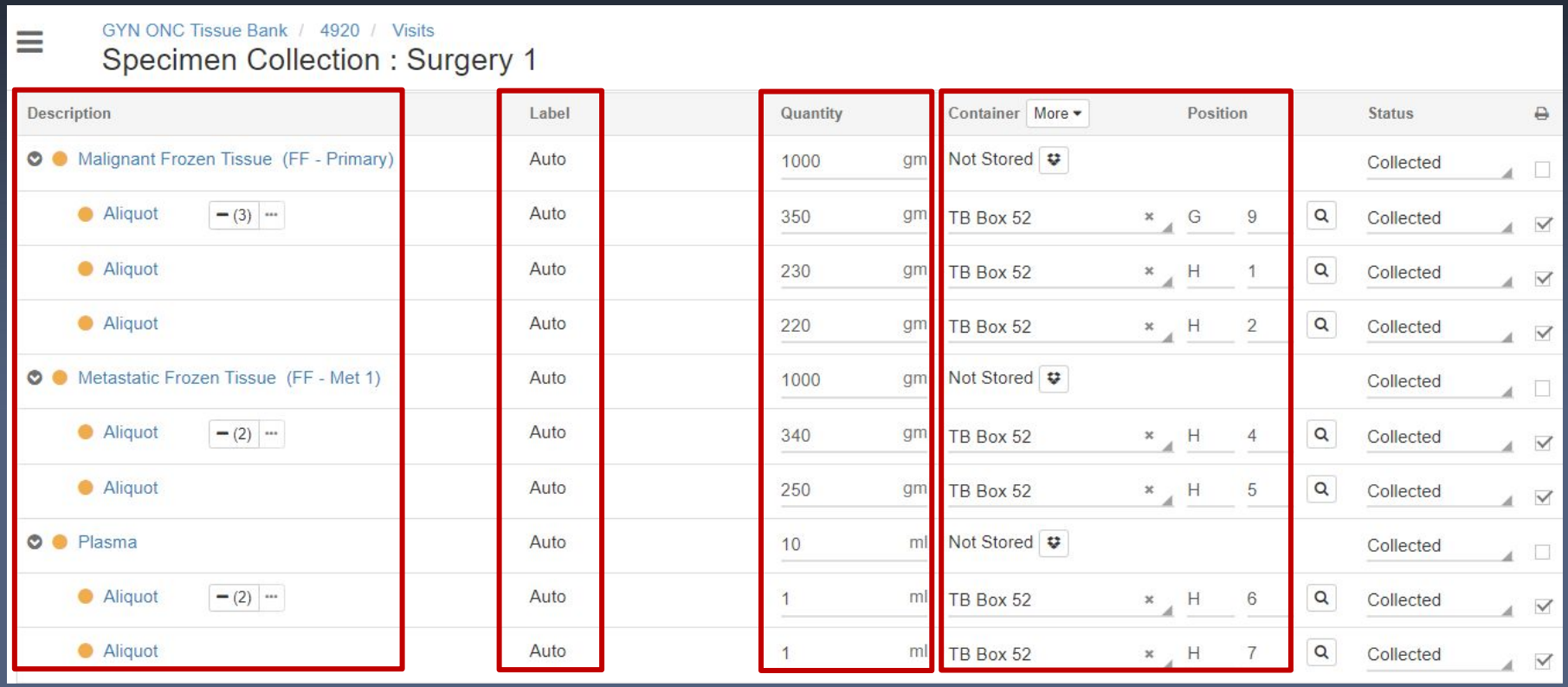
Pending Visits

Visit	Date	Pending Specimens	
Surgery 1	Not Specified	20	Collect
Surgery 2	Not Specified	18	
Core Biopsy	Not Specified	4	
Paracentesis	Not Specified	1	Collect

Visit
Specimens

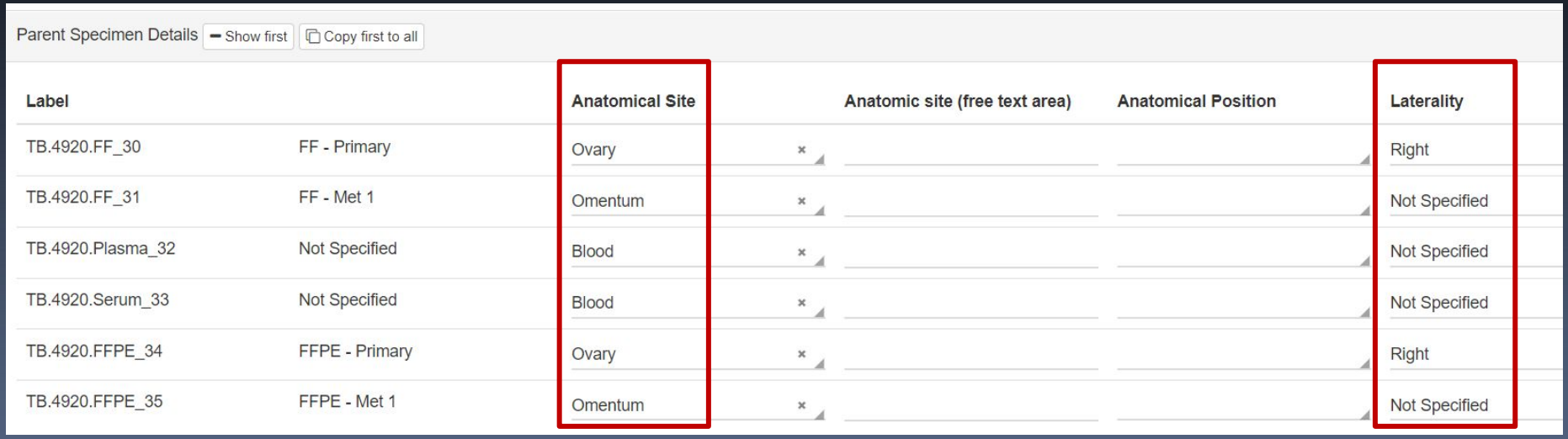
Specimen Registration

- Number of aliquots
- Specimen quantity (grams, mL, blocks)
- Container and location assignment
- Auto-generation of specimen label name according to CP specifications



Customizable "Nth Step"

- Additional step utilized to capture data pertinent to our lab's objectives and processes:
  - Anatomical site
  - Laterality



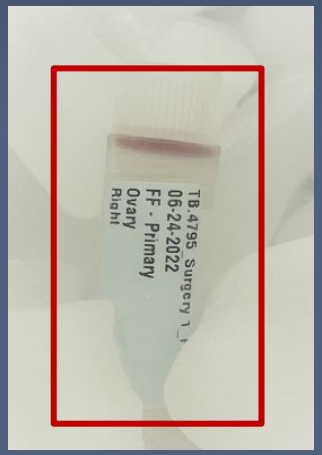
Parent Specimen Details — Show first — Copy first to all

Label		Anatomical Site	Anatomic site (free text area)	Anatomical Position	Laterality
TB.4920.FF_30	FF - Primary	Ovary			Right
TB.4920.FF_31	FF - Met 1	Omentum			Not Specified
TB.4920.Plasma_32	Not Specified	Blood			Not Specified
TB.4920.Serum_33	Not Specified	Blood			Not Specified
TB.4920.FFPE_34	FFPE - Primary	Ovary			Right
TB.4920.FFPE_35	FFPE - Met 1	Omentum			Not Specified

- Soon to be incorporated:
  - Cancer subtype
  - Stage
  - Grade
  - Ischemia time
  - Presence of hemolysis

Specimen Labels Printed

Description	Label	Location
Malignant Frozen Tissue (FF - Primary)	TB.4920.FF_1	Not Stored
Aliquot	TB.4920.FF_1a	TB Box 25 (A x 2)
Aliquot	TB.4920.FF_1b	TB Box 25 (A x 3)
Aliquot	TB.4920.FF_1c	TB Box 25 (A x 4)
Metastatic Frozen Tissue (FF - Met 2)	TB.4920.FF_3	Not Stored
Aliquot	TB.4920.FF_3a	TB Box 25 (A x 7)
Aliquot	TB.4920.FF_3b	TB Box 25 (A x 8)
Metastatic Frozen Tissue (FF - Met 3)	TB.4920.FF_4	Not Stored
Aliquot	TB.4920.FF_4a	TB Box 25 (A x 9)



Reports

All specimens have been labeled, barcoded and stored.

Queries!!!

1) How many serum specimens are available from OVCA patients with high-grade serous cancer?

2) How many FFPE samples are available from EMCA patients? Do these have matched FF tissue?

3) What was the average ischemia time for all FF tissue samples from the last 6 months?

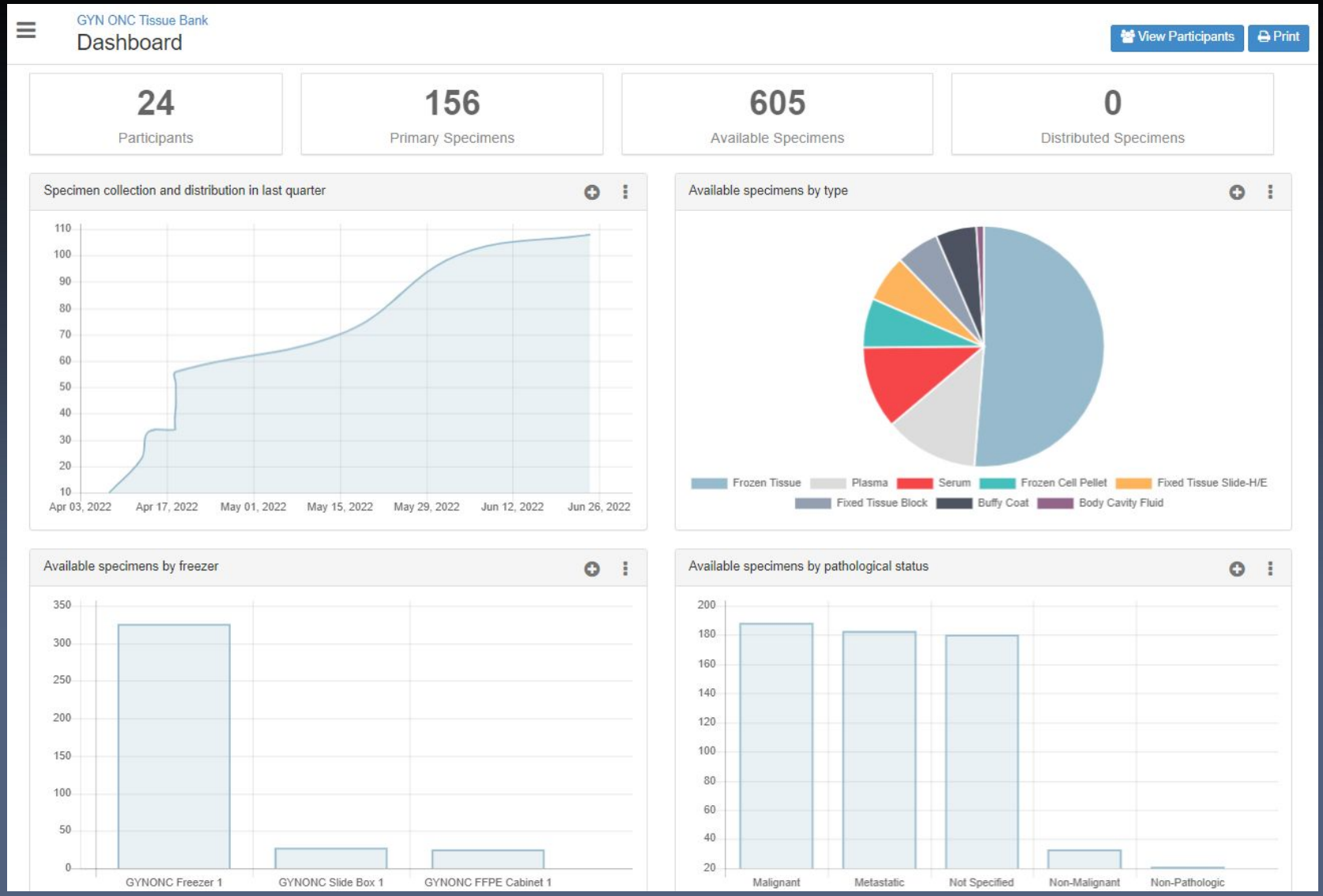
4) How many OVCA specimens did we collect last year? What were the cancer subtypes?

Reports: How to work with the Data

ID	Collection Date	Clinical Diagnosis	Cancer Subtype	Specimen Label	Specimen Name	Specimen Type	Anatomic Site	Quantity	Units	Location	Row	Col
4920	7/8/2022	OVCA	Serous	TB.4920.FF_1a	FF - Primary	Malignant	Ovary	350	mg	TB Box 25	A	1
4920	7/8/2022	OVCA	Serous	TB.4920.FF_1b	FF - Primary	Malignant	Ovary	255	mg	TB Box 25	A	2
4920	7/8/2022	OVCA	Serous	TB.4920.FF_2a	FF – Met 1	Metastatic	Omentum	320	mg	TB Box 25	A	3
4920	7/8/2022	OVCA	Serous	TB.4920.FF_2b	FF – Met 1	Metastatic	Omentum	180	mg	TB Box 25	A	4
4925	7/18/22	OVCA	Clear Cell	TB.4925.FF_1a	FF - Primary	Malignant	Ovary	360	mg	TB Box 25	C	5
4925	7/18/22	OVCA	Clear Cell	TB.4925.FF_1b	FF - Primary	Malignant	Ovary	287	mg	TB Box 25	C	6
4925	7/18/22	OVCA	Clear Cell	TB.4925.Se_5a	Blood	Blood	Blood	1	mL	TB Box 25	C	7
4925	7/18/22	OVCA	Clear Cell	TB.4925.FFPE_4	FFPE – Met 1	Metastatic	Peritoneum	1	count	FFPE Drawer 1	20	1
4925	7/18/22	OVCA	Clear Cell	TB.4925.HE_4a	H&E – Met 1	Metastatic	Peritoneum	1	count	H&E Box 5	55	1
5001	8/12/22	OVCA	Endometrioid	TB.5001.FF_1a	FF – Primary	Malignant	Ovary				B	2
5001	8/12/22	OVCA	Endometrioid	TB.5001.FF_1b	FF - Primary	Malignant	Ovary				B	3

Participants	23
Visits	23
Specimens	384

Dashboard


GYN ONC Tissue Bank
Dashboard
View Participants
Print
24
Participants
156
Primary Specimens
605
Available Specimens
0
Distributed Specimens
Specimen collection and distribution in last quarter
110
100
90
80
70
60
50
40
30
20
10
Apr 03, 2022
Apr 17, 2022
May 01, 2022
May 15, 2022
May 29, 2022
Jun 12, 2022
Jun 26, 2022
Available specimens by type
Frozen Tissue
Plasma
Serum
Frozen Cell Pellet
Fixed Tissue Slide-H/E
Fixed Tissue Block
Buffy Coat
Body Cavity Fluid
Available specimens by freezer
350
300
250
200
150
100
50
0
GYNONC Freezer 1
GYNONC Slide Box 1
GYNONC FFPE Cabinet 1
Available specimens by pathological status
200
180
160
140
120
100
80
60
40
20
Malignant
Metastatic
Not Specified
Non-Malignant
Non-Pathologic

- To establish a Workflow for specimen distribution
- Incorporate more clinical data within Open Specimen
- Become more savvy with Query capabilities as the options are limitless!

Suggestions for Improvement

- Automatic data pull from Epic to Open Specimen
- An "undo" or back button
- More descriptive error messages
- Upload consent form / Upload scanned image (H&E slide)
- API integration from Traditional REDCap to Open Specimen – in order to map clinical data on a specimen-level

THANK YOU!

rachelabbott@wustl.edu