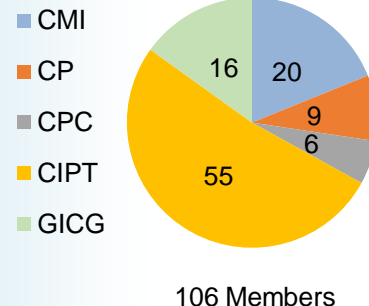


Biospecimen Repository & Histopathology Shared Resource

Aims

- The **CAP-accredited** BRHS SR's primary aims are to:
- Provide tissue analysis, including histological, immunohistochemical, immunofluorescence staining, routine and special histologic technique, and tissue microarray
- Consent, bank, and distribute biospecimens and provide consultation to CINJ investigators to optimize the collection of primary and correlative data from clinical trials

Research Program Support (2018–2022)



Publications

Total	165
IF > 10	27

Peer-Reviewed Grants

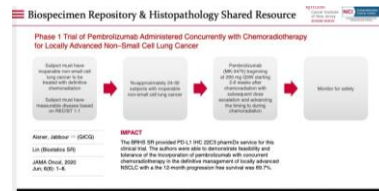
All	39 (2T)
NCI	28 (2T)

GICG, CMI, CIPT



J Clin Invest, 2020

CIPT



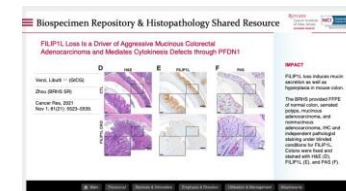
JAMA Oncol, 2020

CP



Theranostics, 2022

GICG



Cancer Res, 2021

Leading Personnel & Roles



Gregory Riedlinger, MD, PhD
Interim Director



Kelly Walton
Histopathology Manager



Zhongren (David) Zhou, MD
Co-Director



Joseph Rosenberg
Biorepository Manager



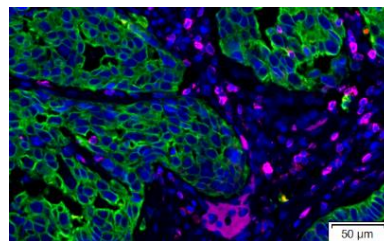
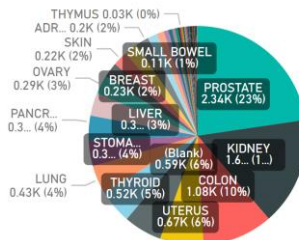
Kathleen Dwyer
Program Administrator

Services & Innovation

New

- Consenting patients to CINJ banking protocol and other research studies – Cooperman Barnabas and other RWJBH hospitals
- [Online Biospecimen query dashboard](#)
- Processing, embedding, cutting or snap-freezing tissue – New Sakura tissue processor, embedding center, and automated coverslipper
- New CK4600 automated tissue microarrayer
- Multiplex IHC

Primary Site	SPECIMEN SITE
<input type="checkbox"/> Select all	<input type="checkbox"/> Select all
<input type="checkbox"/> (Blank)	<input type="checkbox"/> ABDOMINAL
<input type="checkbox"/> ABDOMINAL WALL	<input type="checkbox"/> ADRENAL
<input type="checkbox"/> ADRENAL	<input type="checkbox"/> ANUS
<input type="checkbox"/> AMPULLA	<input type="checkbox"/> APPENDIX
<input type="checkbox"/> AMPULLA OF VATER	<input type="checkbox"/> ASSORTED TISSUE T...
<input type="checkbox"/> ANUS	<input type="checkbox"/> BILE DUCT
<input type="checkbox"/> APPENDIX	<input type="checkbox"/> BLADDER
<input type="checkbox"/> BLADDER	<input type="checkbox"/> BRAIN



Continuing

- Targeted collection & distribution of biospecimens for IRB approved research studies
- Immunohistochemistry & Immunofluorescence
- Routine and Special histology staining
- Preparation of tissue slides for Laser Capture Microdissection
- Sample management system uses OnCore Biospecimen Module



Parkin Ubiquitinates Phosphoglycerate Dehydrogenase (PHGDH) to Suppress Serine Synthesis and Tumor Progression

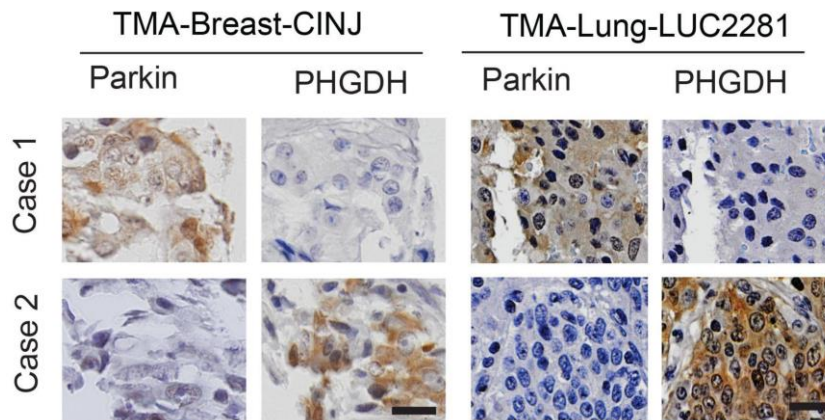
Shen, Hu, Feng ✉ (GICG)

White (CMI)

Haffty (CIPT)

Su (MSR co-author)
Lu SE (BSR co-author)

J Clin Invest, 2020
130(6):3253–3269



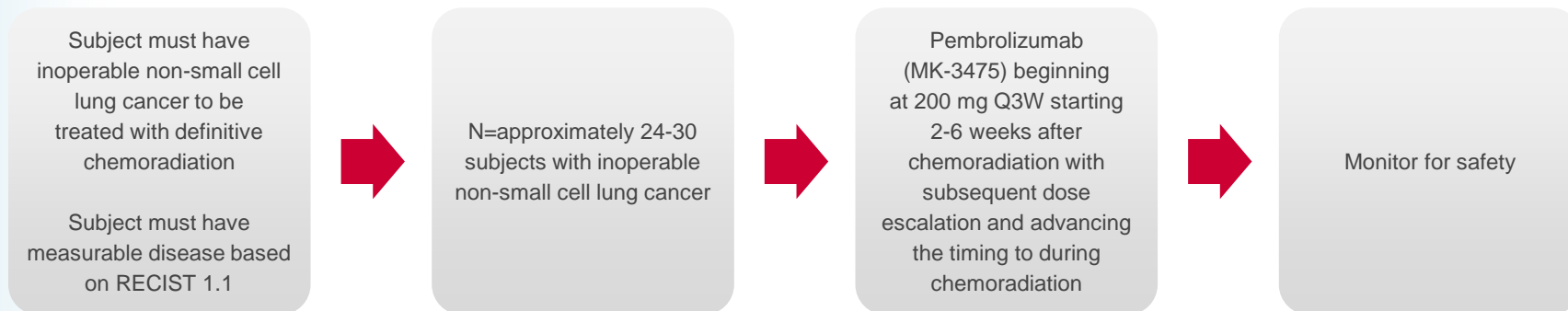
The BRHS SR used a special TMA composed of 200 primary breast tumors and performed IHC to show that Parkin inhibits tumorigenesis through negative regulation of PHGDH. Additional TMAs for lung and breast tumors were obtained by US Biomax. Representative images of IHC staining of Parkin and PHGDH in human breast cancer specimens and lung cancer specimens

IMPACT

PHGDH is frequently overexpressed in human cancer, including breast and lung cancers. This overexpression activates serine synthesis to promote cancer progression and is associated with poor prognosis in cancer patients

The authors present evidence that through ubiquitination and degradation of PHGDH, Parkin suppresses serine synthesis, which contributes greatly to the tumor-suppressive function of Parkin

Phase 1 Trial of Pembrolizumab Administered Concurrently with Chemoradiotherapy for Locally Advanced Non-Small Cell Lung Cancer



Aisner, Jabbour ✉ (GICG)

Lin (BSR)

JAMA Oncol, 2020
6(6):848-855

IMPACT

The BRHS SR provided PD-L1 IHC 22C3 pharmDx service for this clinical trial. The authors were able to demonstrate feasibility and tolerance of the incorporation of pembrolizumab with concurrent chemoradiotherapy in the definitive management of locally advanced NSCLC with a the 12-month progression free survival was 69.7%

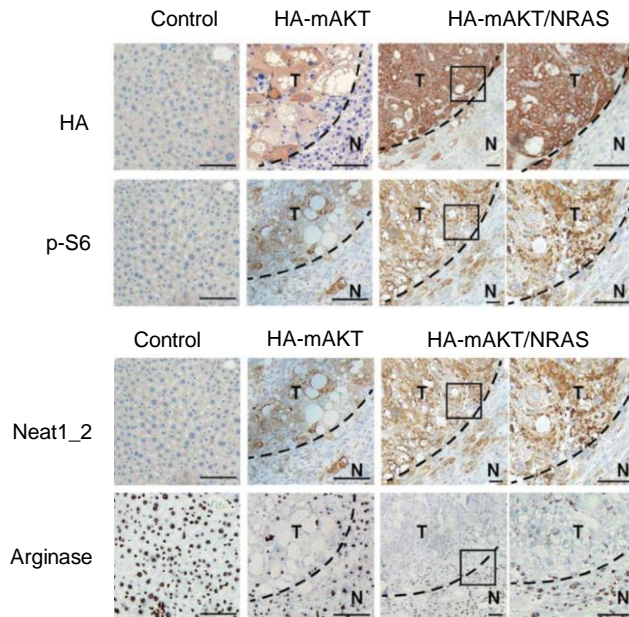
mTOR Regulates Aerobic Glycolysis Through NEAT1 and Nuclear Paraspeckle-mediated Mechanism in Hepatocellular Carcinoma

Burley, Zheng ✉ (CP)

Su (MSR co-author)

Theranostics. 2022;
12(7): 3518–3533

The BRHS SR performed H&E staining and optimized anti-HA IHC staining for the investigator. Mouse liver tumor tissues were stained by IHC positively for the HCC marker Arginase, but negatively for the cholangiocarcinoma marker CK19. Neat1_2 was stained using RNAscope



IMPACT

Previous human clinical trials of rapalogs in advanced HCC failed to achieve desired endpoints and better patient survival outcomes

Our observations reveal that NEAT1 expression/paraspeckle biogenesis is a key determinant for the success of mTORC1-targeted cancer therapy in liver cancer

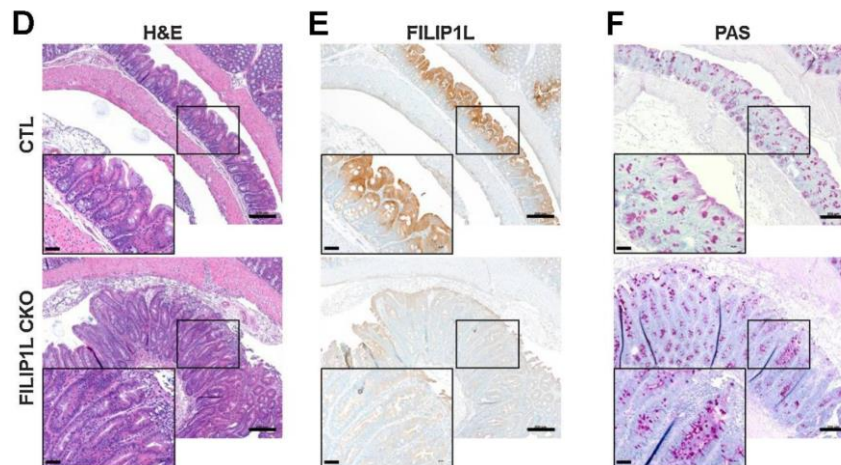
FILIP1L Loss is a Driver of Aggressive Mucinous Colorectal Adenocarcinoma and Mediates Cytokinesis Defects through PFDN1

Verzi, Libutti ✉ (GICG)

Zhou (BRHS SR co-author)

Cancer Res, 2021

Nov 1; 81(21): 5523–5539



The BRHS provided FFPE of normal colon, serrated polyps, mucinous adenocarcinoma, and nonmucinous adenocarcinoma, IHC and independent pathologist staining under blinded conditions for FILIP1L. Colons were fixed and stained with H&E (D), FILIP1L (E), and PAS (F)

IMPACT

The authors have shown that Filamin A interacting protein 1-like (FILIP1L) is a versatile tumor suppressor in many types of cancer

Here they show that FILIP1L increases xenograft growth in vivo, drives colonic epithelial hyperplasia in mice, and increases mucin secretion and mitotic defects in mucinous colorectal adenocarcinoma, an aggressive subtype of colorectal cancer with poor prognosis

Emphasis & Future Directions

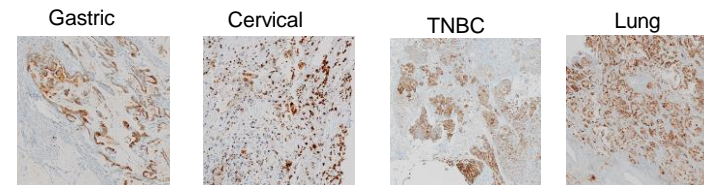
CINJ Priority Cancer Collections by Ethnicity

(Jan 2018 – Dec 2022)

Obtain CINJ vouchers to boost collections and utilization of samples in BIPOC populations

Race	Breast	Cervix	Colon	Lung	Melanoma	Prostate	Rectum	Totals
Asian	5	0	35	4	2	31	0	77
Black or African American	9	0	48	4	0	39	10	110
Unknown	0	0	3	1	0	4	0	8
White	62	6	202	151	41	195	0	657
Totals	76	6	288	160	43	269	10	852

IIT Support Emphasis



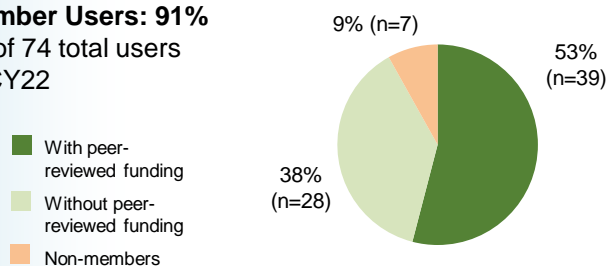
Cancer Immunotherapy PI: Hinrichs. CT83 IHC assay is used to identify suitable candidates for targeted cellular therapy protocol by testing their tumor tissue for expression of **KK-LC-1 antigen**

Future Directions

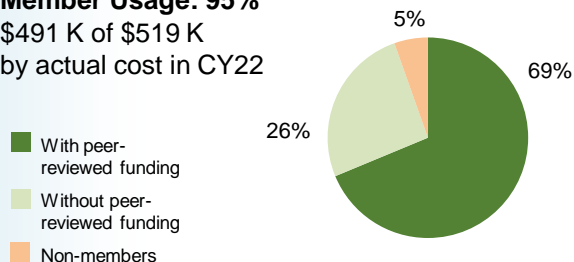
- Recruit a Chief of Oncologic Pathology who will also serve as the new BRHS director
- Add a pediatric tumor biobank with its own consent protocol in the next few months
- We also expect to integrate additional RWJBH hospitals

Utilization & Management

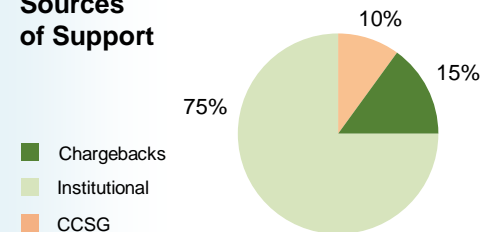
Member Users: 91%
67 of 74 total users
in CY22



Member Usage: 95%
\$491 K of \$519 K
by actual cost in CY22

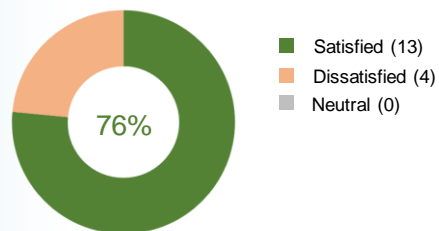


Sources of Support



FY24 Chargeback target: 15%

Satisfaction Survey for CY22 services



Participated: 17 of 67 members (25%)

Organization & Governance

BRHS

12.6 FTE

SRACs

- SR Advisory Committee meets annually
- Subcommittee meets quarterly
- SRM supports organization

SRM

- SR Faculty Directors report to the ADSR
- SRM tracks and supports SRAC recommendations, productivity, service development, outreach

CINJ Director

- RLC
- Finance & Admin
- EAB

Supporting Information

Program Support

Publications

Grants

5-Year User List

Advisory Committee

FY23 Presentation

Action Items

Notes

Quality Satisfaction

Annual Survey
Action Items

Usage

CY22 Usage

Submitted Information

Research Strategy

Aims

SRM Research
Strategy