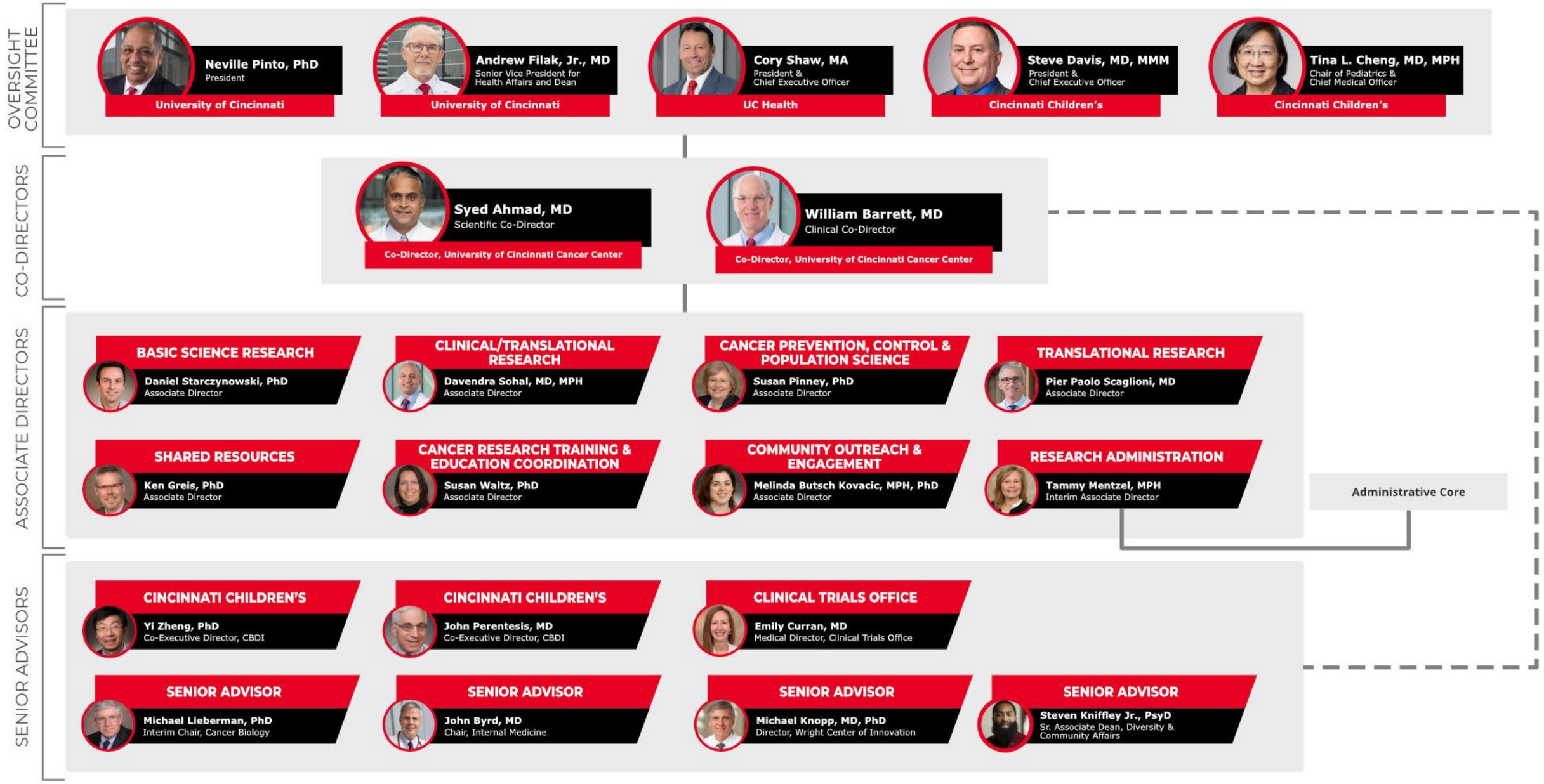
RESEARCH RESOURCES *for* Human Population Studies

University of CINCINNATI CANCER CENTER™

University of Cincinnati • UC Health • Cincinnati Children's

Thursday, December 12, 2024 | 9:00 a.m. – 12:00 p.m.

Organizational Capabilities – Research Structure



What is human population research in cancer?

- Human population research on cancer focuses on understanding the causes of cancer, identifying high-risk groups, and developing ways to prevent cancer and its treatment.
- Cancer disparities
- Cancer risk factors
- Predictive biomarkers of cancer including genetic and genomic studies
- Cancer prevention
- Secondary health effects of cancer treatment
- Cancer care delivery

Examples of research studies needing these tools:

- Human population or clinical translational study
- Your thoughts

Examples of research studies needing these tools:

- Human population or clinical translational study
- Frequency of co-morbidity in our patient population – EPIC
  - Are those with breast cancer more likely to be later diagnosed with colorectal cancer?
- Determining survival after a treatment (all cause survival) – National Death Index
- Using banked biospecimens (UC Tumor Bank) or clinical labs (EPIC) as disease predictors
- Association between environmental exposure and cancer (radiation and lung cancer) – OCISS for cancer case ascertainment
- Need sample/size or power calculations for a grant proposal

Workshop Webpage

- Website for each of the resources
- https://med.uc.edu/institutes/cancer/member-resources/population-sciences-research-resources

- Contact information for speakers

- Recording of the workshop

Workshop Evaluation

- Please complete either paper or online workshop evaluation today.
- Best case would be to receive an evaluation from each workshop attendee

- Post 3-month follow up.
- You will receive an email with a link to an anonymous survey with only 4 questions

Thank you to…

- Our speakers
- Kelly Hummel and Taylor Jo Young
- Brad McElhaney
- And YOU for taking the time to come to the workshop

RESEARCH RESOURCES *for* Human Population Studies

University of CINCINNATI CANCER CENTER™

University of Cincinnati • UC Health • Cincinnati Children's

Thursday, December 12, 2024 | 9:00 a.m. – 12:00 p.m.

Obtaining EPIC Data for a Research Study



Jason L. Keller, MS

Biomedical Informatics Data Analyst
University of Cincinnati College of Medicine

CCTST Center for Clinical & Translational Science & Training

UNIVERSITY OF Cincinnati

Obtaining Epic Data for a Research Study

Jason Keller, MS
Director,
UC Center for Health Informatics

December 12, 2024

Cincinnati Children's

VA HEALTH CARE Defining EXCELLENCE in the 21st Century Cincinnati VA Medical Center

UC Health

CTSA Clinical & Translational Science Awards

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Discover the UC Center for Health Informatics!

The **UC Center for Health Informatics (CHI)** is one of the operational cores of the Department of Biostatistics, Health Informatics, and Data Sciences at the University of Cincinnati College of Medicine. As the academic home for health informatics, CHI is dedicated to advancing the field through innovative research, education, and collaboration.

The CHI is the designated Honest Broker for UC Health to access data for research. The CHI maintains a close relationship with the Institutional Review Board and the Office of Research to ensure data are properly accessed, delivered, and logged based on federal and university compliance requirements.

Our Mission: To improve health and healthcare by leveraging cutting-edge informatics methods and technologies. We provide essential data services, support clinical and translational research, and foster educational programs in biomedical and health informatics.

Agenda:

- *What do I need to know before submitting a request?*
- *How do I submit a request?*
- *Now that I've submitted my request, what happens next?*

What do you need to know before submitting a request?

What type of service do you need?

- Consultations
- Data Extractions
- Custom Software
- Automated Data Collection
- Real World Evidence Publishing
- Data Science/ Visualization

- What type of data are you requesting?
  - Discrete clinical variables
  - Unstructured clinical or procedural notes?
  - Scanned documents (Epic Hyperspace Media tab)?
  - Other external data?
- What type of dataset(s) are you requesting?
- What funding source(s) will be used to pay for data services?

What are some available clinical data elements?

Patient Information	Clinical Notes
Encounter Information	Flowsheet Information
Diagnoses	Admission, Transfer, and Discharge Information
Medical History	Social History
Problem Lists	Surgical History
Procedure Orders	Tumor Staging
Procedure Results (Labs)	Family History
Procedure Notes (Pathology, Imaging, etc.)	Financial Class/Insurance Provider
Medication Orders	Immunizations
Medication Administrations	Location of Service

What are the available dataset types?

Dataset	Includes PHI?	Requires IRB?	Requires DUA?
Feasibility**	No	No	No
De-Identified**	No	No	No
Limited**	Dates and Zip codes only	No	Yes
Fully Identified	Yes	Yes	Yes

** Safe Harbor Method.

PHI – Protected Health Information

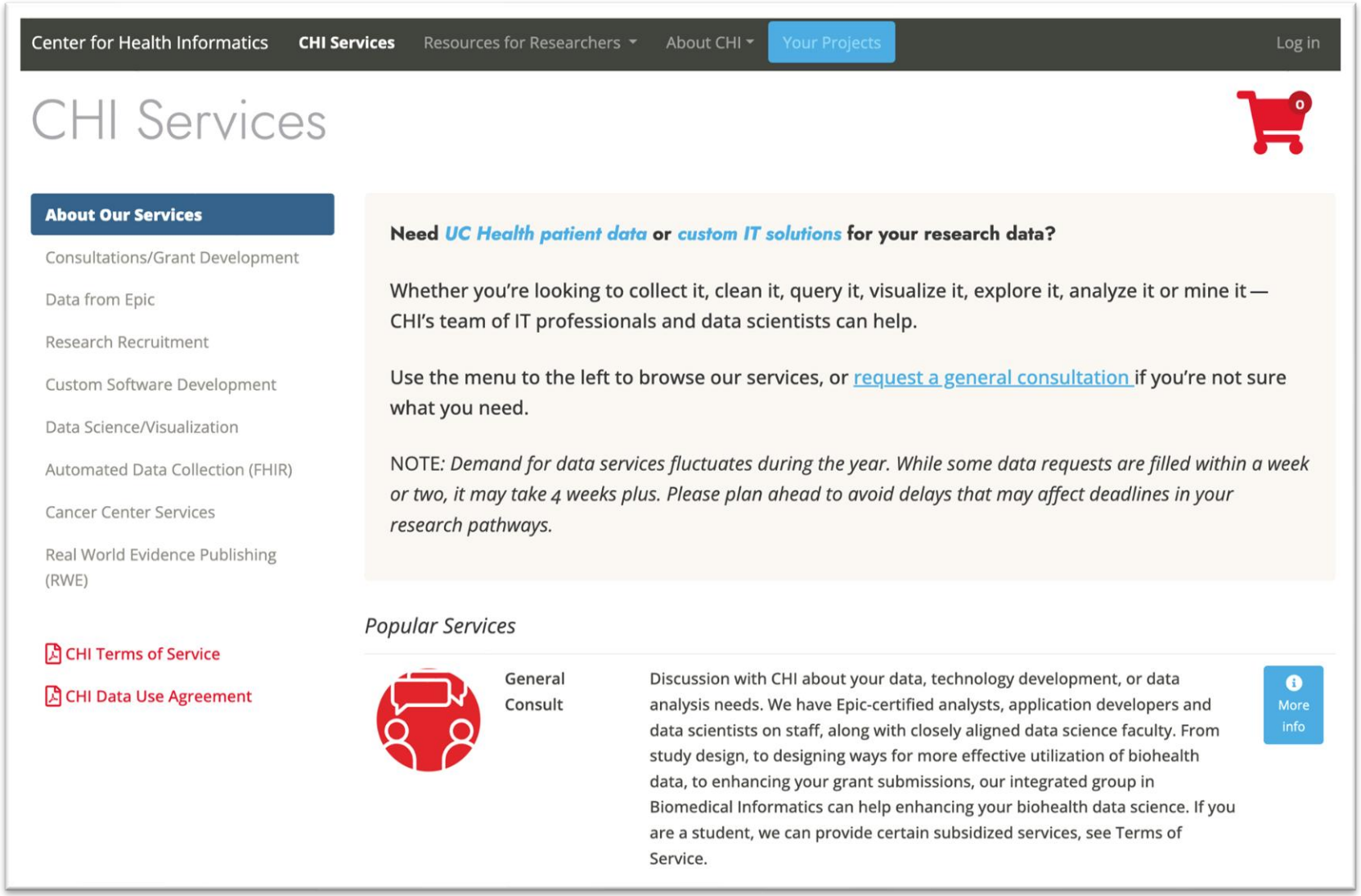
IRB – Institutional Review Board

DUA – Data Use Agreement

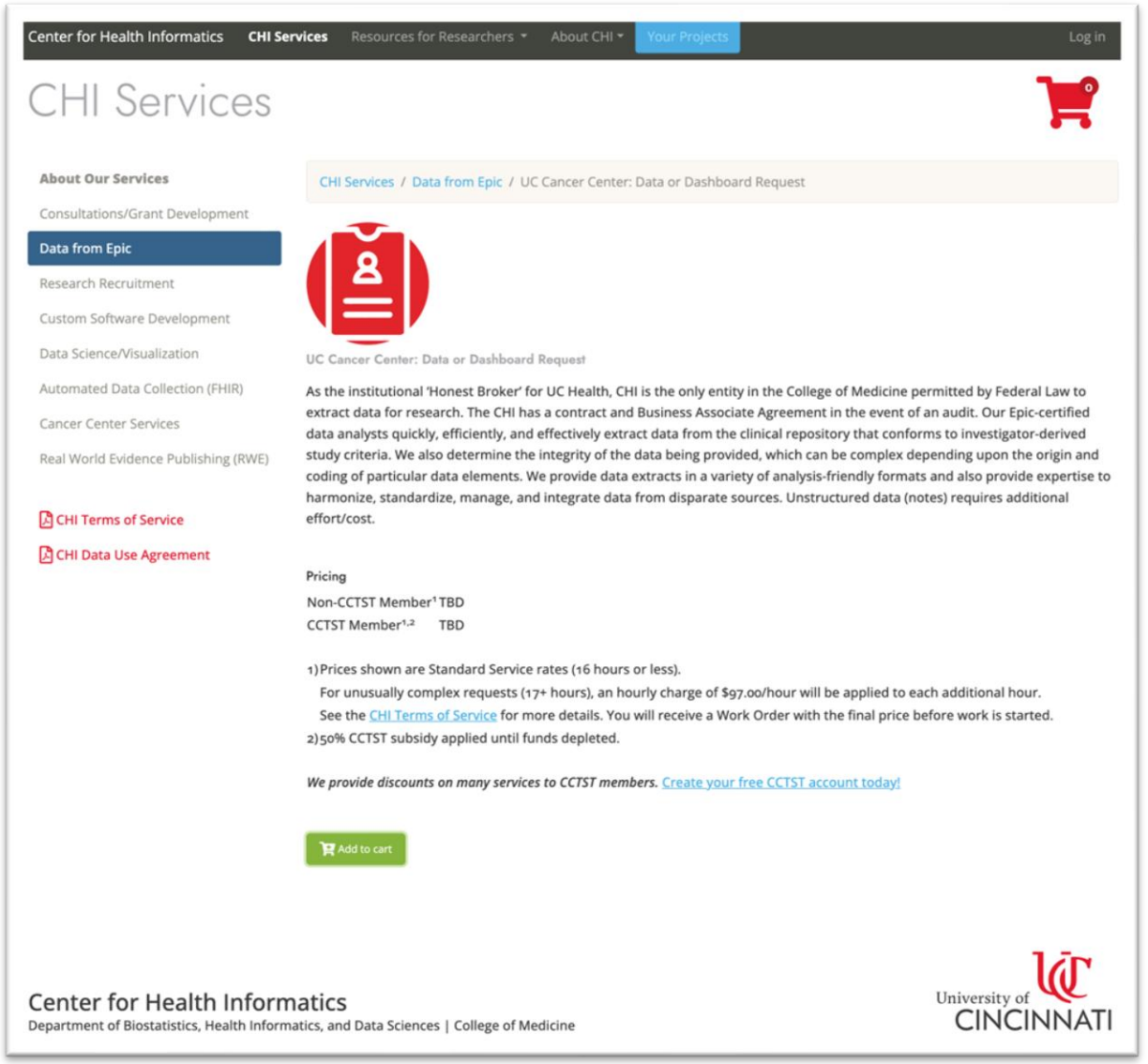
How do you submit a request?

Submit a service request using
CHI's Service Portal

https://chi.uc.edu/research


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About Our Services
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Data from Epic
Research Recruitment
Custom Software Development
Data Science/Visualization
Automated Data Collection (FHIR)
Cancer Center Services
Real World Evidence Publishing (RWE)
CHI Terms of Service
CHI Data Use Agreement
Need UC Health patient data or custom IT solutions for your research data?
Whether you're looking to collect it, clean it, query it, visualize it, explore it, analyze it or mine it — CHI's team of IT professionals and data scientists can help.
Use the menu to the left to browse our services, or request a general consultation if you're not sure what you need.
NOTE: Demand for data services fluctuates during the year. While some data requests are filled within a week or two, it may take 4 weeks plus. Please plan ahead to avoid delays that may affect deadlines in your research pathways.
Popular Services
General Consult
Discussion with CHI about your data, technology development, or data analysis needs. We have Epic-certified analysts, application developers and data scientists on staff, along with closely aligned data science faculty. From study design, to designing ways for more effective utilization of biohealth data, to enhancing your grant submissions, our integrated group in Biomedical Informatics can help enhancing your biohealth data science. If you are a student, we can provide certain subsidized services, see Terms of Service.
More info

	query with us.	
Study Feasibility directly from Epic	In some cases, the TriNetX tool does not have the specific data elements needed to find how many patients we have with certain criteria. The CHI can drill down into the Epic data model and find almost anything you need. This process is more involved than TriNetX and takes a few more days.	More info
Clinical Data Extractions: FULLY Identified Data Sets	CHI can provide fully identified data sets from UC Health's Epic Electronic Health System and other clinical systems for research use. Fully identified data sets can include HIPAA identifiers that requires an approved IRB protocol.	More info
Clinical Data Extractions: LIMITED Data Sets	CHI can provide data sets from UC Health's Epic Electronic Health System and other clinical systems for research use. Limited datasets include exact dates and zip codes but are otherwise de-identified. Limited datasets require a Data Use Agreement but not an IRB protocol.	More info
Clinical Data Extractions: DE-IDENTIFIED Data Sets	CHI can provide de-identified data sets from UC Health's Epic Electronic Health System and other clinical systems for research use. De-identified data sets have been stripped of all HIPAA identifiers and typically do not require an IRB protocol.	More info
UC Cancer Center: Data or Dashboard Request	CHI can provide UC Cancer Center members access to various data sources, encompassing identified and de-identified information from UC Health's Epic Electronic Health System and other clinical systems for research purposes. Fully identified datasets contain HIPAA identifiers and require an approved IRB protocol.	More info



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CHI Services

About Our Services

- Consultations/Grant Development
- Data from Epic
- Research Recruitment
- Custom Software Development
- Data Science/Visualization
- Automated Data Collection (FHIR)
- Cancer Center Services
- Real World Evidence Publishing (RWE)

CHI Terms of Service

CHI Data Use Agreement

CHI Services / Data from Epic / UC Cancer Center: Data or Dashboard Request

UC Cancer Center: Data or Dashboard Request

As the institutional 'Honest Broker' for UC Health, CHI is the only entity in the College of Medicine permitted by Federal Law to extract data for research. The CHI has a contract and Business Associate Agreement in the event of an audit. Our Epic-certified data analysts quickly, efficiently, and effectively extract data from the clinical repository that conforms to investigator-derived study criteria. We also determine the integrity of the data being provided, which can be complex depending upon the origin and coding of particular data elements. We provide data extracts in a variety of analysis-friendly formats and also provide expertise to harmonize, standardize, manage, and integrate data from disparate sources. Unstructured data (notes) requires additional effort/cost.

Pricing

Non-CCTST Member[1] TBD

CCTST Member[1,2] TBD

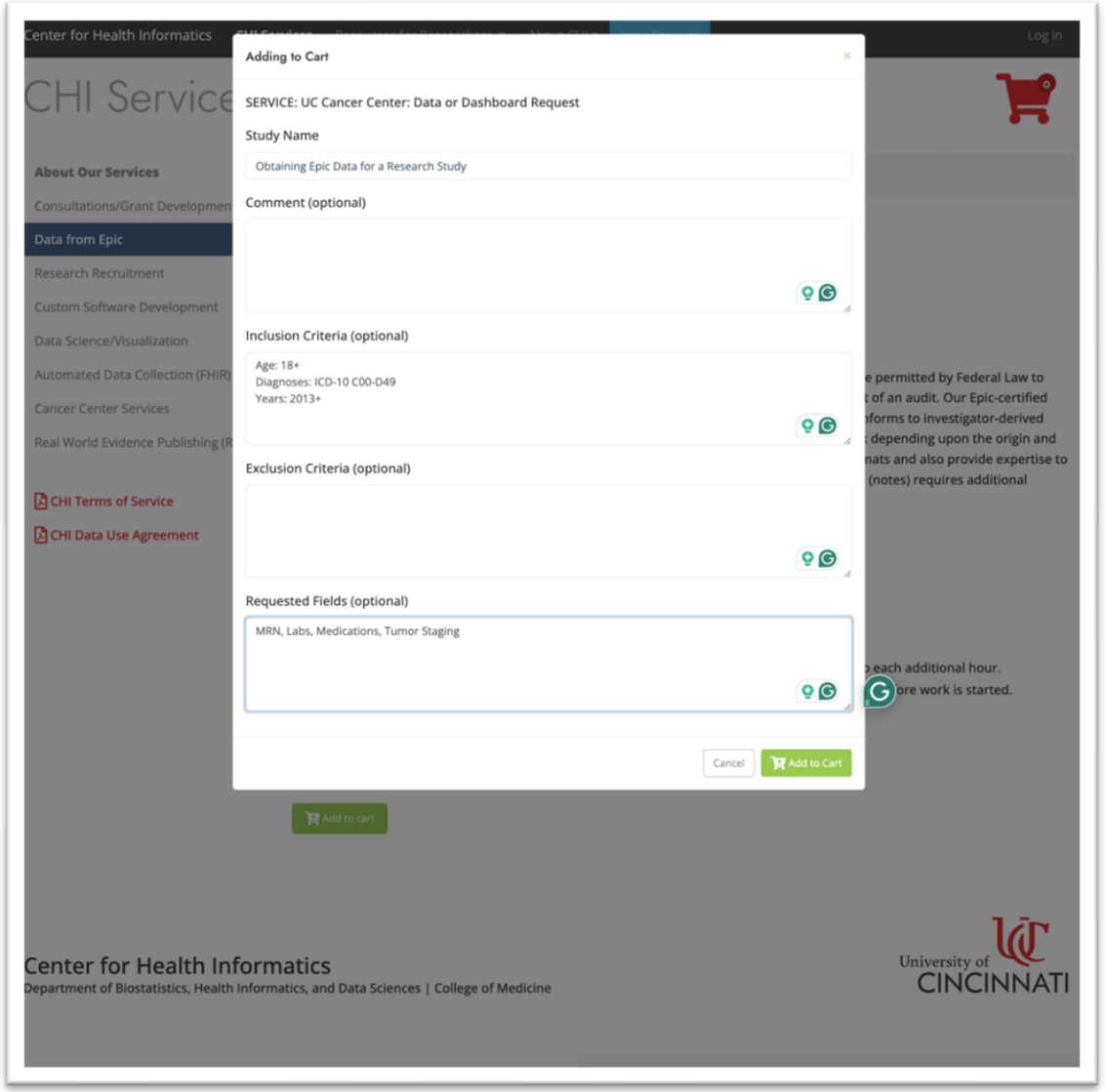
1) Prices shown are Standard Service rates (16 hours or less).
For unusually complex requests (17+ hours), an hourly charge of $97.00/hour will be applied to each additional hour.
See the CHI Terms of Service for more details. You will receive a Work Order with the final price before work is started.
2) 50% CCTST subsidy applied until funds depleted.

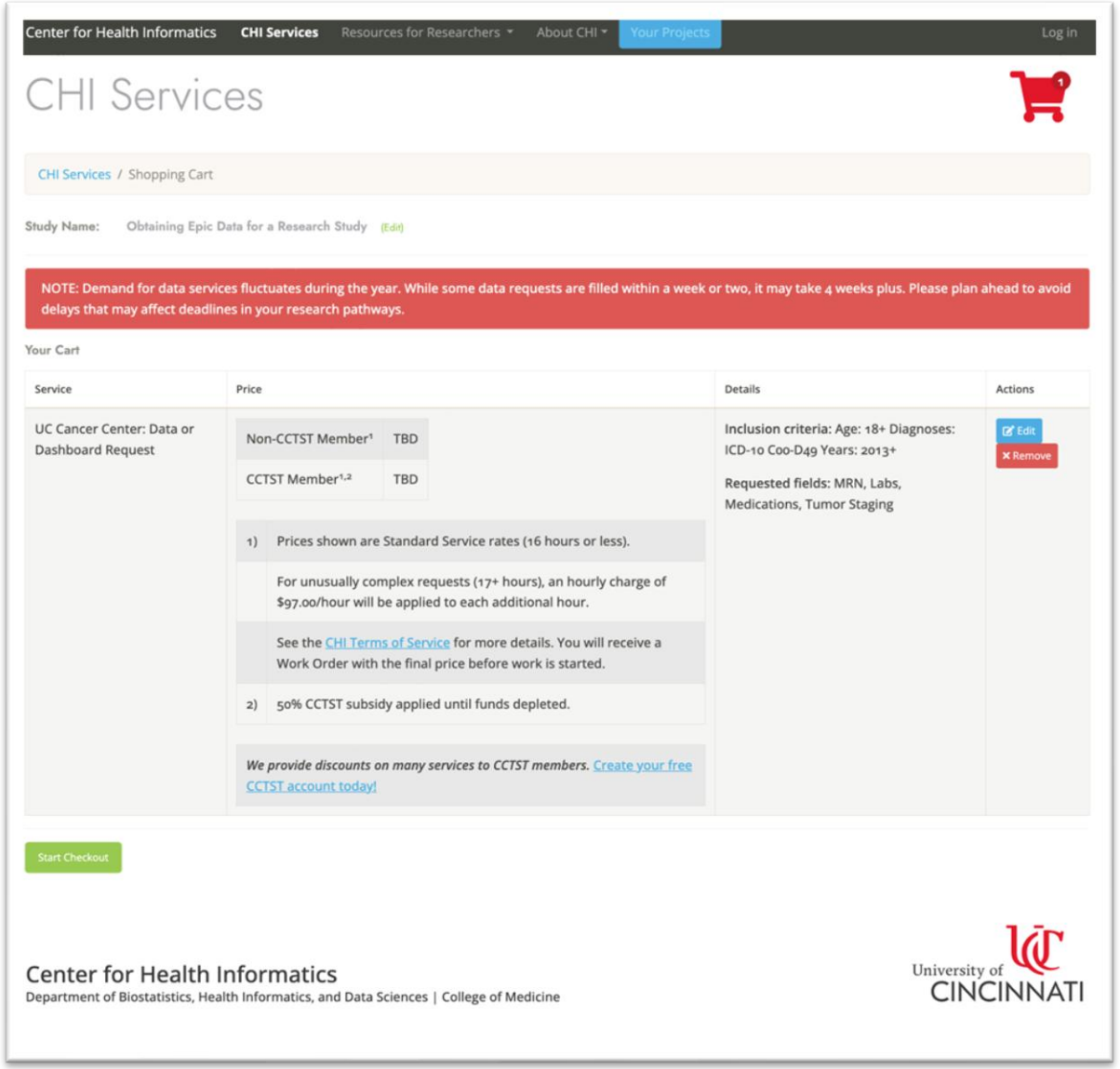
We provide discounts on many services to CCTST members. Create your free CCTST account today!

Add to cart

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Cancer Center Services
Real World Evidence Publishing (R
CHI Terms of Service
CHI Data Use Agreement
Adding to Cart
SERVICE: UC Cancer Center: Data or Dashboard Request
Study Name
Obtaining Epic Data for a Research Study
Comment (optional)
Inclusion Criteria (optional)
Age: 18+
Diagnoses: ICD-10 C00-D49
Years: 2013+
Exclusion Criteria (optional)
Requested Fields (optional)
MRN, Labs, Medications, Tumor Staging
Cancel
Add to Cart
Add to cart
e permitted by Federal Law to
t of an audit. Our Epic-certified
nforms to investigator-derived
depending upon the origin and
nats and also provide expertise to
(notes) requires additional
each additional hour.
ore work is started.
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CHI Services / Shopping Cart

Study Name: Obtaining Epic Data for a Research Study (Edit)

NOTE: Demand for data services fluctuates during the year. While some data requests are filled within a week or two, it may take 4 weeks plus. Please plan ahead to avoid delays that may affect deadlines in your research pathways.

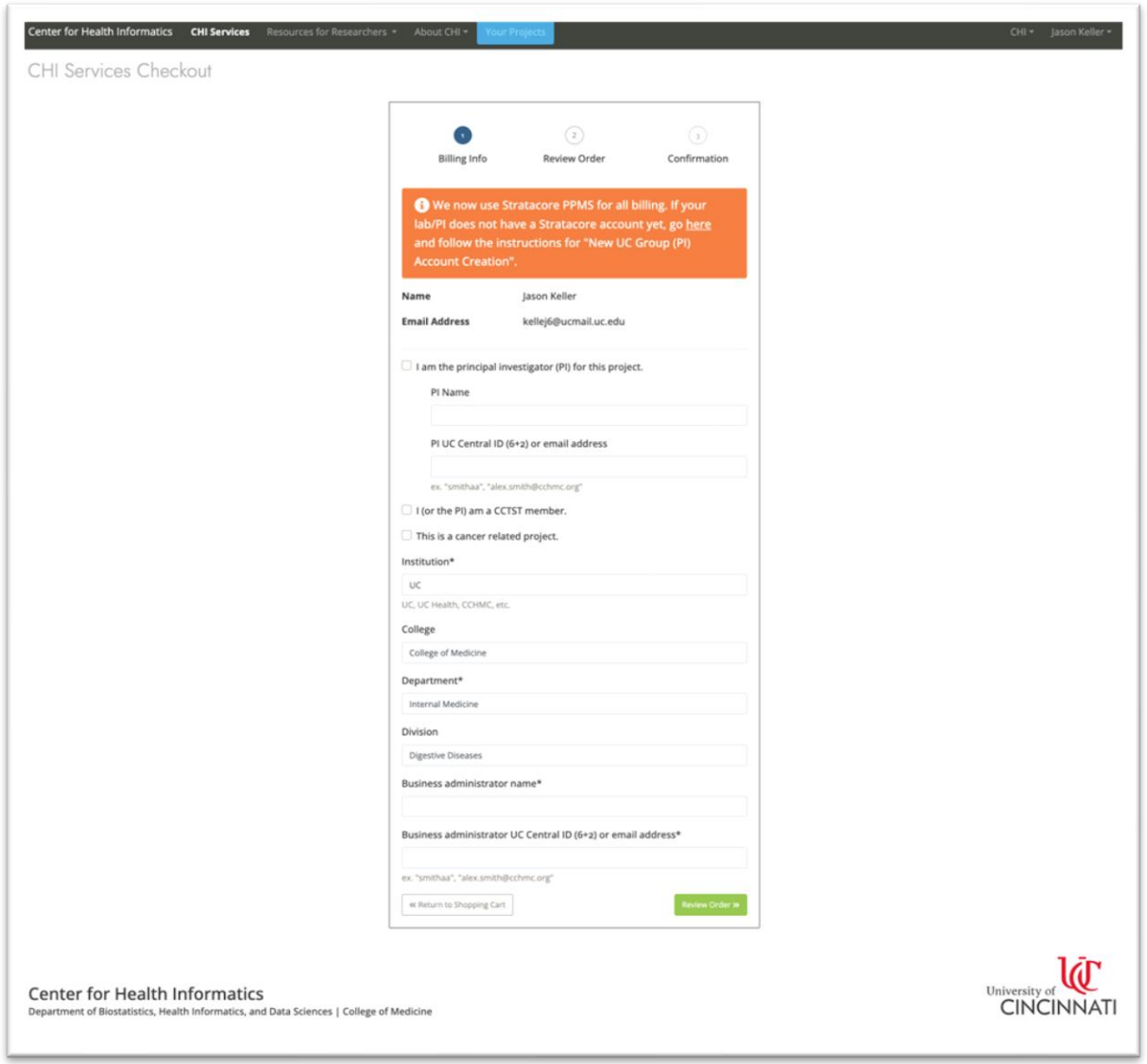
Your Cart

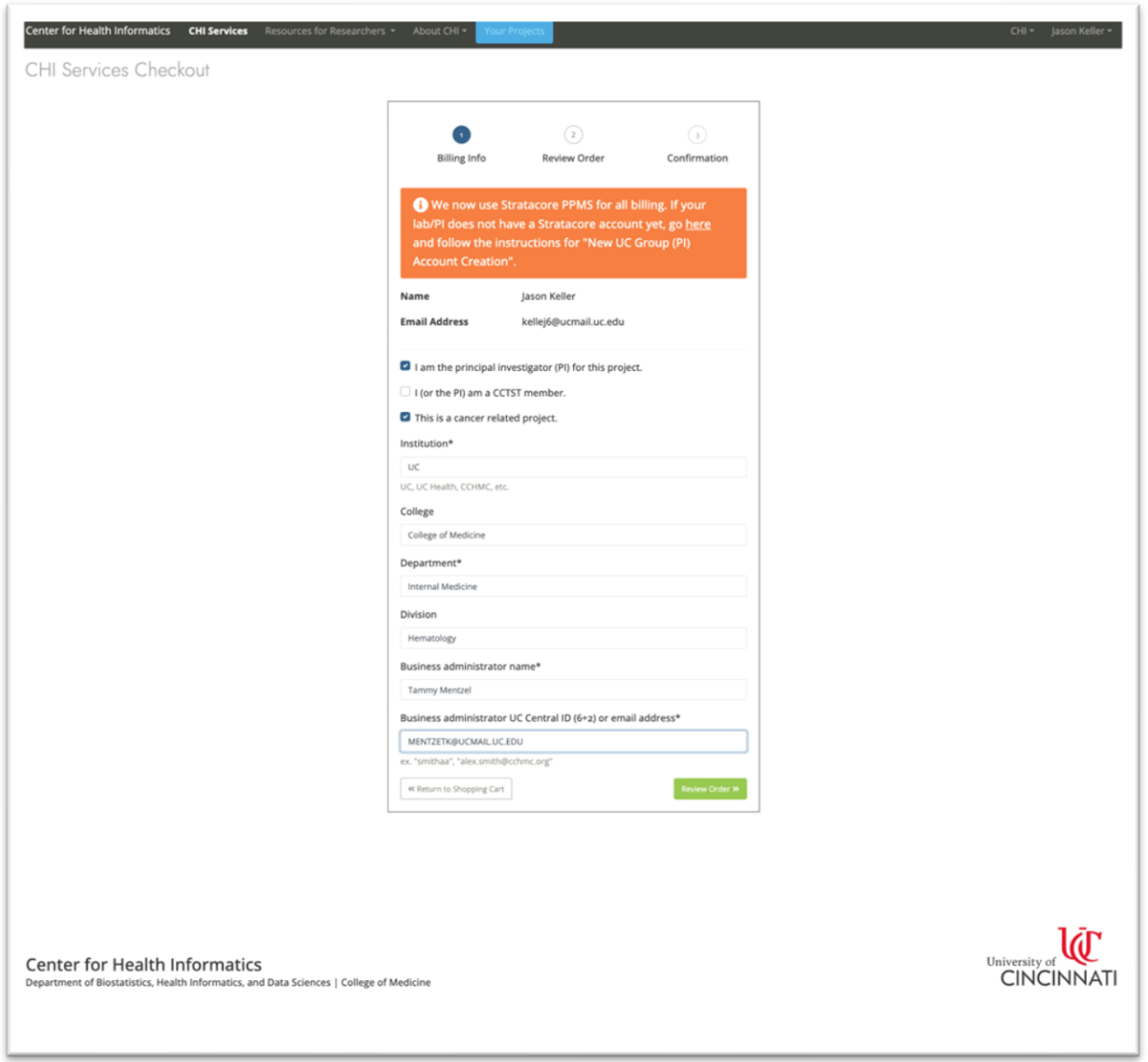
Service	Price	Details	Actions
UC Cancer Center: Data or Dashboard Request	Non-CCTST Member[1] TBD CCTST Member[1,2] TBD 1) Prices shown are Standard Service rates (16 hours or less). For unusually complex requests (17+ hours), an hourly charge of $97.00/hour will be applied to each additional hour. See the CHI Terms of Service for more details. You will receive a Work Order with the final price before work is started. 2) 50% CCTST subsidy applied until funds depleted. *We provide discounts on many services to CCTST members.* Create your free CCTST account today!	Inclusion criteria: Age: 18+ Diagnoses: ICD-10 Coo-D49 Years: 2013+ Requested fields: MRN, Labs, Medications, Tumor Staging	Edit Remove

Start Checkout

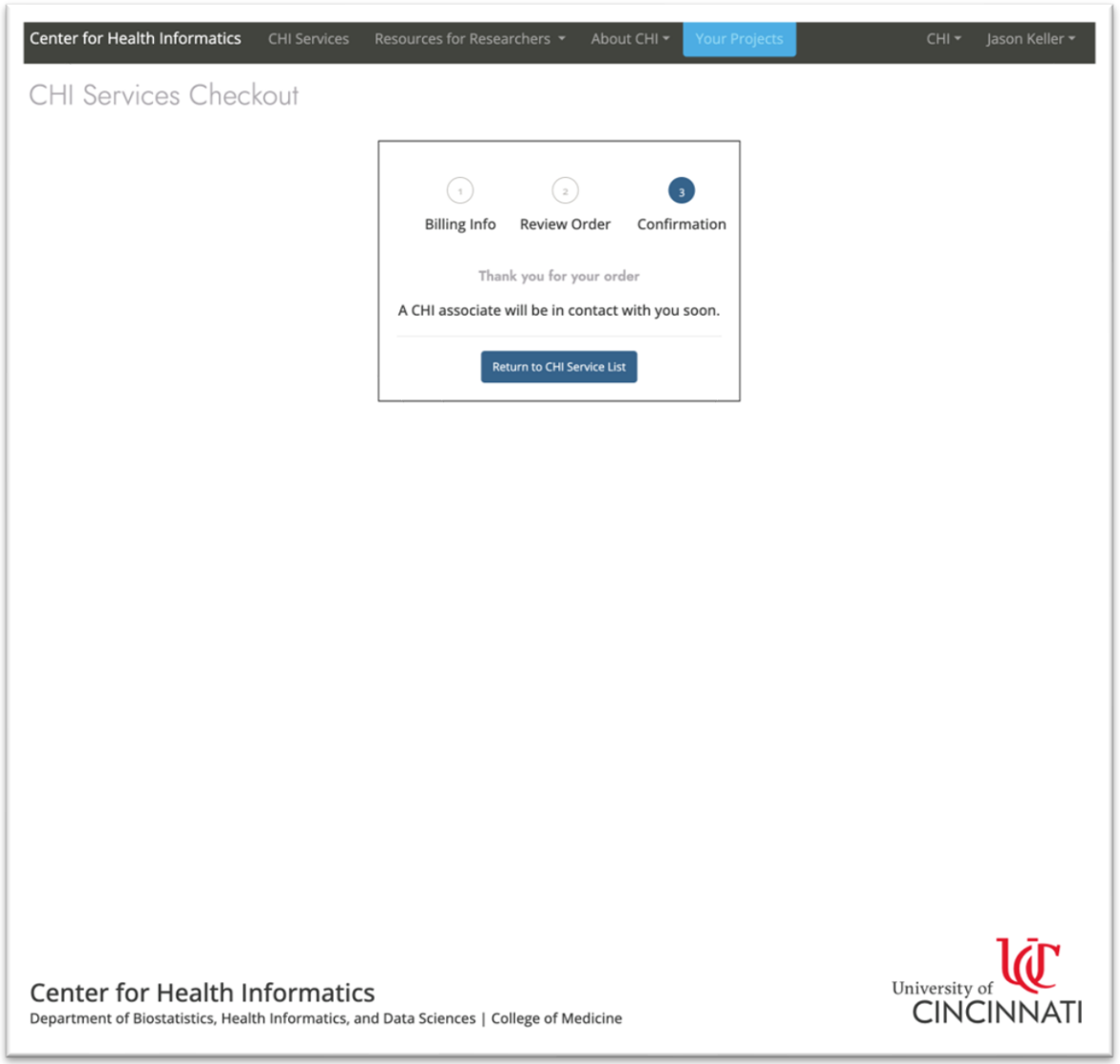
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Review Order
Confirmation
We now use Stratacore PPMS for all billing. If your lab/PI does not have a Stratacore account yet, go here and follow the instructions for "New UC Group (PI) Account Creation".
Name
Jason Keller
Email Address
kellej6@ucmail.uc.edu
I am the principal investigator (PI) for this project.
PI Name
PI UC Central ID (6+2) or email address
ex. "smithaa", "alex.smith@cchmc.org"
I (or the PI) am a CCTST member.
This is a cancer related project.
Institution*
UC
UC, UC Health, CCHMC, etc.
College
College of Medicine
Department*
Internal Medicine
Division
Digestive Diseases
Business administrator name*
Business administrator UC Central ID (6+2) or email address*
ex. "smithaa", "alex.smith@cchmc.org"
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We now use Stratacore PPMS for all billing. If your lab/PI does not have a Stratacore account yet, go here and follow the instructions for "New UC Group (PI) Account Creation".
Name
Jason Keller
Email Address
kellej6@ucmail.uc.edu
I am the principal investigator (PI) for this project.
I (or the PI) am a CCTST member.
This is a cancer related project.
Institution*
UC
UC, UC Health, CCHMC, etc.
College
College of Medicine
Department*
Internal Medicine
Division
Hematology
Business administrator name*
Tammy Mentzel
Business administrator UC Central ID (6+2) or email address*
MENTZETK@UCMAIL.UC.EDU
ex. "smithaa", "alex.smith@cchmc.org"
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A CHI associate will be in contact with you soon.
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Now that you've submitted your request, what happens next?

- I will process your request, generate a project and task(s), and assign it to an analyst.
- I will review the task(s) at our next bi-weekly Data Services Team meeting. (1st and 3rd Mondays of each month)
- I will follow up with any clarifying questions.
  - The assigned analyst may also follow up as needed.
- I will follow up with your business administrator to obtain funding approval and the appropriate account string.
  - An order will be entered into Stratacore.

- The assigned analyst will begin the extraction process.
  - Depending on the analyst's bandwidth and the extraction's complexity, turnaround time ranges between 1- 8 weeks. ** Submit early if possible **
- Once the data has been extracted:
  - I will verify the IRB has approved a HIPAA waiver and/or consent waiver, if appropriate.
  - I will verify the DUA agreement has been completed, if appropriate.
  - I will approve the data release, and you will receive a data release email with a link to your project folder.

- You will access the project folder, review the data files, and confirm they meet your study requirements.
- I will mark the task(s) as completed.
- I will complete the Stratacore order and submit it for invoicing.

Questions?

Contact Information
combmichi@uc.edu
Jason.Keller@uc.edu

https://chi.uc.edu/research

RESEARCH RESOURCES *for* Human Population Studies

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University of Cincinnati • UC Health • Cincinnati Children's

Thursday, December 12, 2024 | 9:00 a.m. – 12:00 p.m.

Accessing OCISS Data for Research



Emily Bunt, MA

Registry Manager
Ohio Cancer Incidence Surveillance System
Bureau of Health Improvement & Wellness

Accessing Ohio Cancer Incidence Surveillance System (OCISS) Data for Research

Dec. 12, 2024

Emily Bunt, OCISS Registry Manager

Ohio Department of Health

Background

- Population-based central cancer registry for Ohio.
- Purpose is to collect and analyze cancer incidence data to:
  - Determine the burden of cancer in Ohio.
  - Raise awareness about factors that may increase cancer risk and the benefits of early detection.
  - Improve the survival of persons diagnosed with cancer.

Ohio Department of Health

Who is Required to Report?

- Outlined in Ohio Revised Code (ORC 3701.262) and Ohio Administrative Code (OAC 3701-4-01).
- Each physician, dentist, hospital, or person providing diagnostic or treatment services to patients with cancer.

Ohio Department of Health

What Cancers Must Be Reported?

- Any primary in situ or invasive malignant neoplasm.
  - Exceptions include basal cell and squamous cell carcinoma of the skin and carcinoma in situ of the cervix.
- Benign and borderline intracranial and central nervous system neoplasms.

Ohio Department of Health

What Information Must Be Reported?

- Data elements required by the National Program of Cancer Registries (NPCR).
- Several data elements not required by NPCR, but helpful with consolidation and quality control.
- Ohio Tobacco History.

Ohio Department of Health

Consolidation

- Combines information from multiple data sources.
- Consolidation also includes review of all data items.
- OCISS registrars complete consolidation.

Ohio Department of Health

After Consolidation

- Geocoding.
- Completeness tracking.
- Data quality activities and follow up.
- Deduplication.
- Annual death linkages.

Ohio Department of Health

Ohio Department of Health(ODH) Institutional Review Board (IRB)

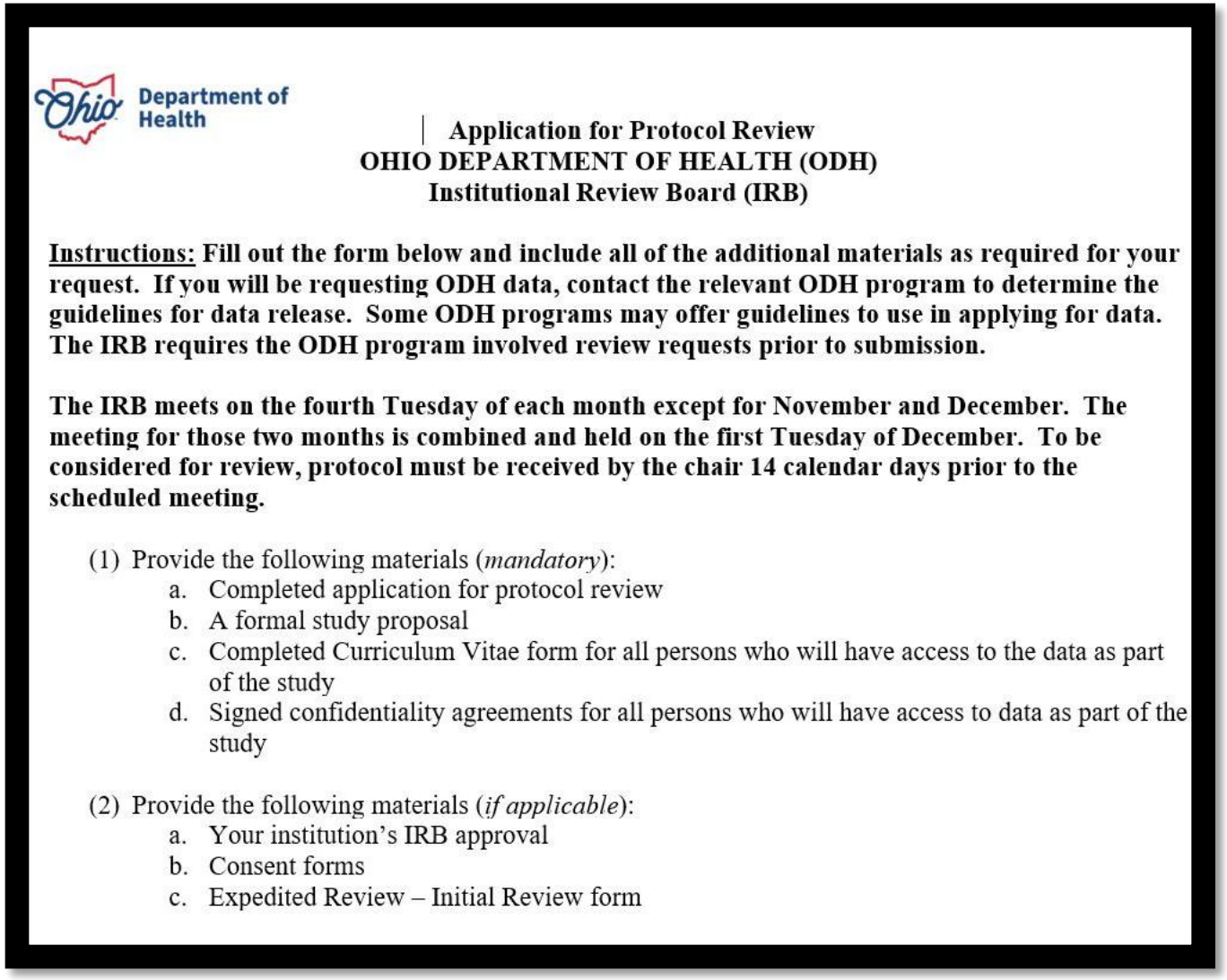
- ODH IRB approval is required to release OCISS data for research.
- The ODH IRB acts as the IRB of record for all State of Ohio agencies.

Ohio Department of Health

ODH IRB Application

This is part of the IRB Application, which can be found here:

- https://odh.ohio.gov/explore-data-and-stats/institutional-review-board.
- Obtain your institutional IRB approval first before applying to ODH IRB.



Department of Health

Application for Protocol Review
OHIO DEPARTMENT OF HEALTH (ODH)
Institutional Review Board (IRB)

Instructions: Fill out the form below and include all of the additional materials as required for your request. If you will be requesting ODH data, contact the relevant ODH program to determine the guidelines for data release. Some ODH programs may offer guidelines to use in applying for data. The IRB requires the ODH program involved review requests prior to submission.

The IRB meets on the fourth Tuesday of each month except for November and December. The meeting for those two months is combined and held on the first Tuesday of December. To be considered for review, protocol must be received by the chair 14 calendar days prior to the scheduled meeting.

(1) Provide the following materials (*mandatory*):
   a. Completed application for protocol review
   b. A formal study proposal
   c. Completed Curriculum Vitae form for all persons who will have access to the data as part of the study
   d. Signed confidentiality agreements for all persons who will have access to data as part of the study

(2) Provide the following materials (*if applicable*):
   a. Your institution's IRB approval
   b. Consent forms
   c. Expedited Review – Initial Review form

Department of Health

Types of OCISS Data Available

- **End-of-Year Data.**
  - Identified.
  - De-Identified.

- **Monthly Data.**
  - Identified.
  - De-Identified.

- **Public Aggregate Data.**

Ohio Department of Health

After IRB approval, then what?

- There are multiple steps to obtaining your data file from OCISS.
- OCISS data is now on the Data Ohio Portal (DOP).

Ohio Department of Health

Data Linkage Information

Depending on the resources available, OCISS staff may be able to perform a linkage of your data to OCISS data, instead of allowing you to download a file.

- Have your IT department set up a secure file transfer location to send your data.

- Verify that minimum patient identifiers are present in your data.

- Put your data into an easily accessed format.

Ohio Department of Health

Letters of Support

You may need to request a Letter of Support from ODH/OCISS for a grant application.

The procedure is outlined at this link: https://odh.ohio.gov/about-us/funding-opportunities/letters-of-support-blurb.

Ohio Department of Health



Ohio Cancer Incidence Surveillance System (OCISS)

WELCOME

REPORTING OF OHIO CANCER INCIDENCE DATA

CANCER CASE REPORTING THROUGH ELECTRONIC HEALTH RECORD SYSTEMS

DATA AND STATISTICS

ACCESS TO OHIO CANCER INCIDENCE DATA

Access to Ohio Cancer Incidence Data

This page contains information on how to access cancer data from the Ohio Cancer Incidence Surveillance System (OCISS).

OCISS is the source of all cancer incidence data (newly diagnosed cancers) for the State of Ohio.

OCISS data is available to the public, Ohio's local health departments, and researchers in multiple formats.

Cancer mortality (death) data is collected and made available by the Ohio Department of Health's (ODH) Bureau of Vital Statistics.

Expand All Sections

Data Available to the Public

Data Available to Ohio's Local Health Departments

Data Available to Researchers

Summaries of OCISS data analyses are available on the OCISS Data and Statistics webpage. These include:

- Statewide and site-specific reports, some of which include data tables by county.
- County profiles – one for each of Ohio's 88 counties plus one for the entire state of Ohio.
- Quick, easy-to-read one to two page fact sheets – statewide data only, not county-specific.

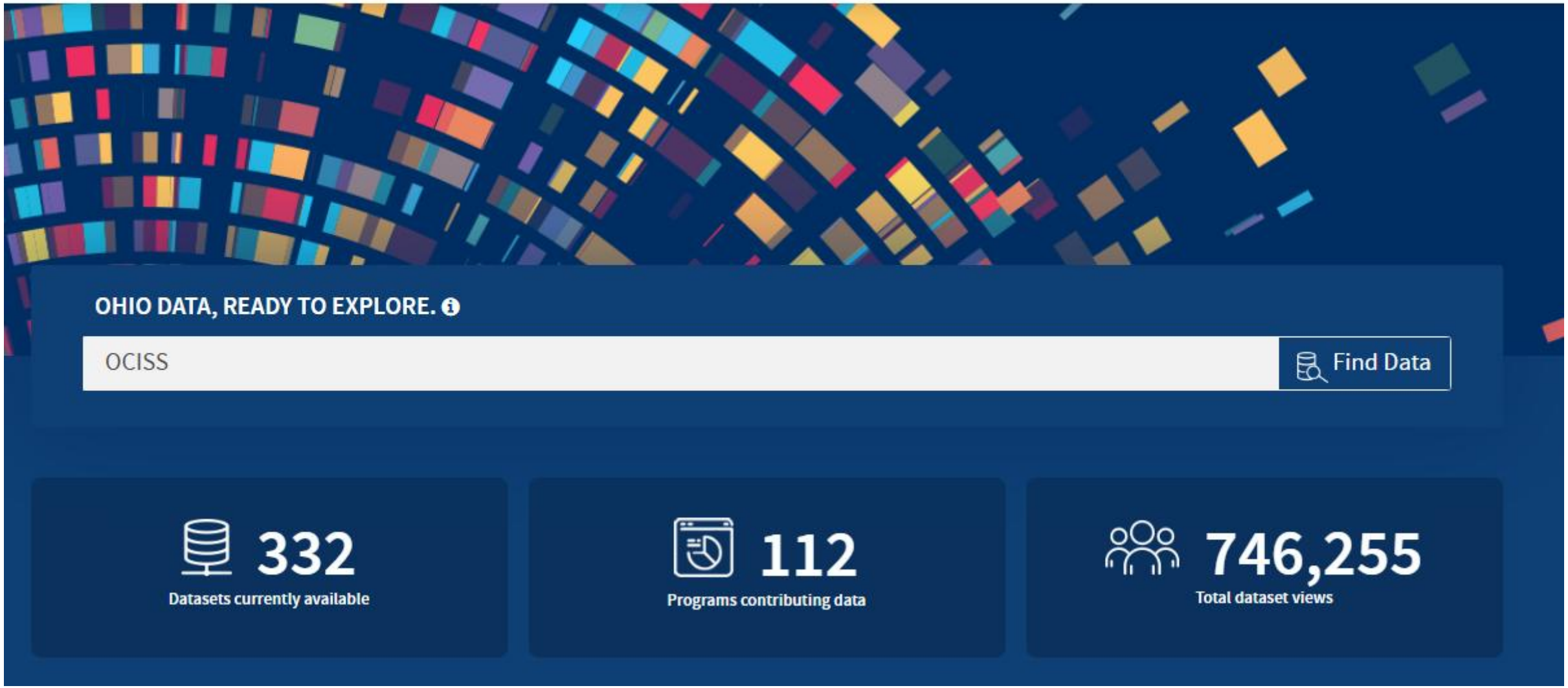
Ohio Department of Health

OCISS Publicly Available Aggregate Data

- There are four OCISS public report builders available on the Data Ohio Portal (DOP) that provide aggregate data.

Invasive Cancer Report Builder End-of-Year Incidence Data (1996-2021)
Invasive Cancer Census Tract Report Builder End-of-Year Incidence Data (1996-2021)
Invasive Cancer Zip Code Report Builder End-of-Year Incidence Data (1996-2021)
Cancer Staged Report Builder End-of-Year Incidence Data (1996-2021)

Ohio Department of Health



Department of Health

Invasive Cancer Report Builder End-of-Year Incidence Data (1996-2021)

Last Refreshed: June 14, 2024

Details | Reference Information | Visualize

The Ohio Cancer Incidence Surveillance System (OCISS) at the Ohio Department of Health collects and analyzes cancer incidence data on all Ohio residents. Cancer incidence is defined as newly-diagnosed cases of cancer. All Ohio providers of medical care are required, by law, to report to OCISS all cancers diagnosed and/or treated in Ohio. A reportable case is defined as any primary malignant neoplasm, with the exception of basal and squamous cell carcinoma of the skin and carcinoma in situ of the cervix. Benign and borderline intracranial and central nervous system tumors are also reportable. The collection and analysis of population-based cancer incidence data help determine the burden of cancer in Ohio's communities, raise awareness about factors that may increase cancer risk and the benefits of early detection, and improve the survival of persons diagnosed with cancer.

This report builder uses a dataset that is created annually at the end of the calendar year and includes data for Ohioans diagnosed with cancer from 1996 through the most complete reporting year, which is two years prior to the calendar year. For example, the OCISS dataset created in December 2023 includes cancers diagnosed from 1996 through 2021. This dataset includes consolidated records that have been reviewed and edited for quality and completeness. Consolidation is the process of combining data from two or more cancer reports for the same patient and tumor. Consolidation is performed to ensure that each cancer is counted only once and that the combined record includes the best information available from all reports.

For more information on OCISS, please follow this link to the program website.

Please click on the Visualize tab to access the report builder.

Ohio Department of Health

Invasive Cancer Report Builder End-of-Year Incidence Data (1996-2021)

Last Refreshed: June 14, 2024

Details | Reference Information | Visualize

Export Data | Share

This tab provides additional reference information about the dataset including: the size of the dataset in terms of rows and columns, a data dictionary, and downloadable reference material or API endpoint details where applicable.

0
Number of columns

0
Number of rows

Documentation

OCISS Data Documentation

Please click on "OCISS Data Documentation" to access information about OCISS Data Files, including a Data List, Technical Notes, and other important details. Clicking here will download a ZIP file with these documents.

Ohio Department of Health

Invasive Cancer Report Builder End-of-Year Incidence Data (1996-2021)

Last Refreshed: June 14, 2024

Details | Reference Information | Visualize | Export Data | Share

Ohio Department of Health

Invasive Cancer

Please Select Row 1

Submit | Reset

Row Selection 1: Make a selection to filter data
Row Selection 2: Make a selection to filter data
Row Selection 3: Make a selection to filter data

Column Selection 1: Make a selection to filter data
Column Selection 2: Make a selection to filter data
Column Selection 3: Make a selection to filter data

Filter 1: Make a selection to filter data — Filter 1 Value
Filter 2: Make a selection to filter data — Filter 2 Value
Filter 3: Make a selection to filter data — Filter 3 Value
Filter 4: Make a selection to filter data — Filter 4 Value
Filter 5: Make a selection to filter data — Filter 5 Value
Filter 6: Make a selection to filter data — Filter 6 Value

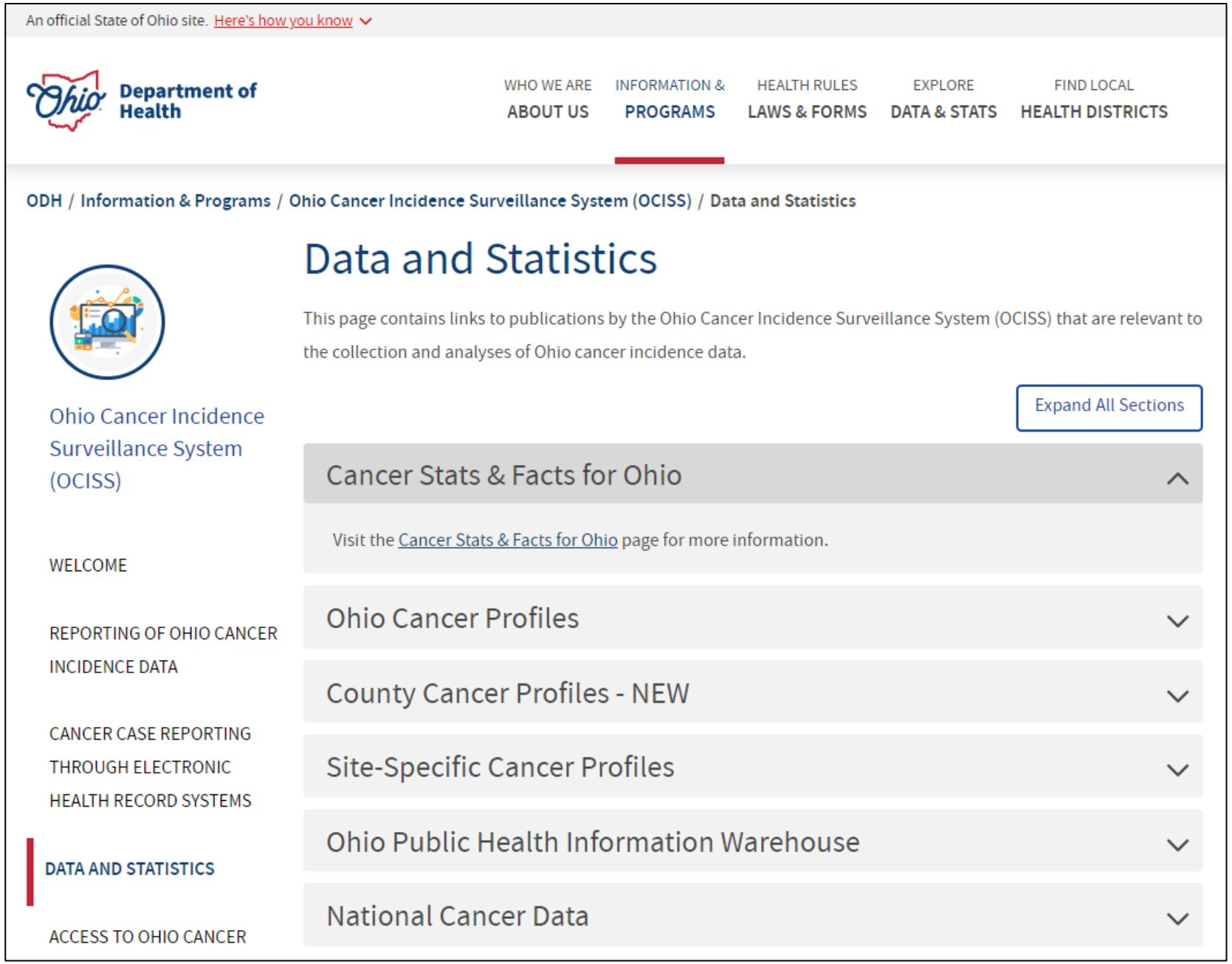
Select your desired measures after clicking on the submit button or the predefined report.

Click the predefined report title to produce the report.

Cancer (Invasive): All Sites/Types, Age Group by Sex

Cancer (Invasive): All Sites/Types, Race by Sex

Ohio Department of Health



Data and Statistics

Department of Health

Department of Health

Hamilton County Cancer Profile 2023

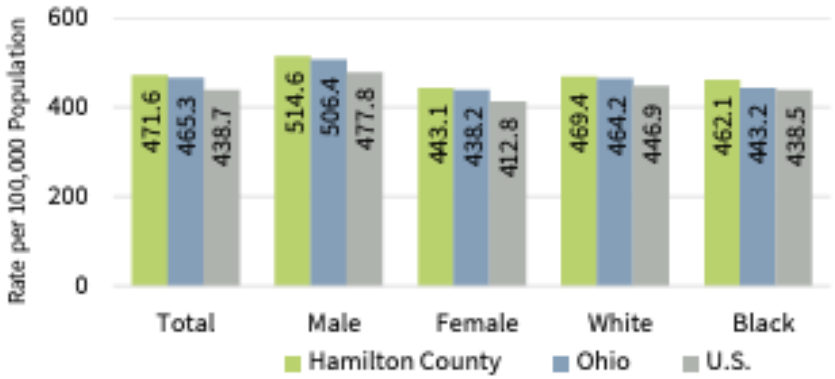


Introduction

Approximately four out of 10 Ohioans will be diagnosed with cancer at some point during their lifetime. Cancer is the second leading cause of death in Ohio, accounting for nearly one in five deaths. This report provides an overview of cancer in Hamilton County, Ohio, including data on cancer incidence (new cases) and mortality (deaths), and Ohio and U.S. comparisons, trends, early detection, and risk factors. This information can be used to increase awareness about the burden of cancer in Hamilton County and to develop targeted cancer programs in the community.

New Cancer Cases

Figure 1. Average Annual Age-Adjusted Cancer Incidence Rates by Sex and Race in Hamilton County, Ohio, and the United States, 2016-2020

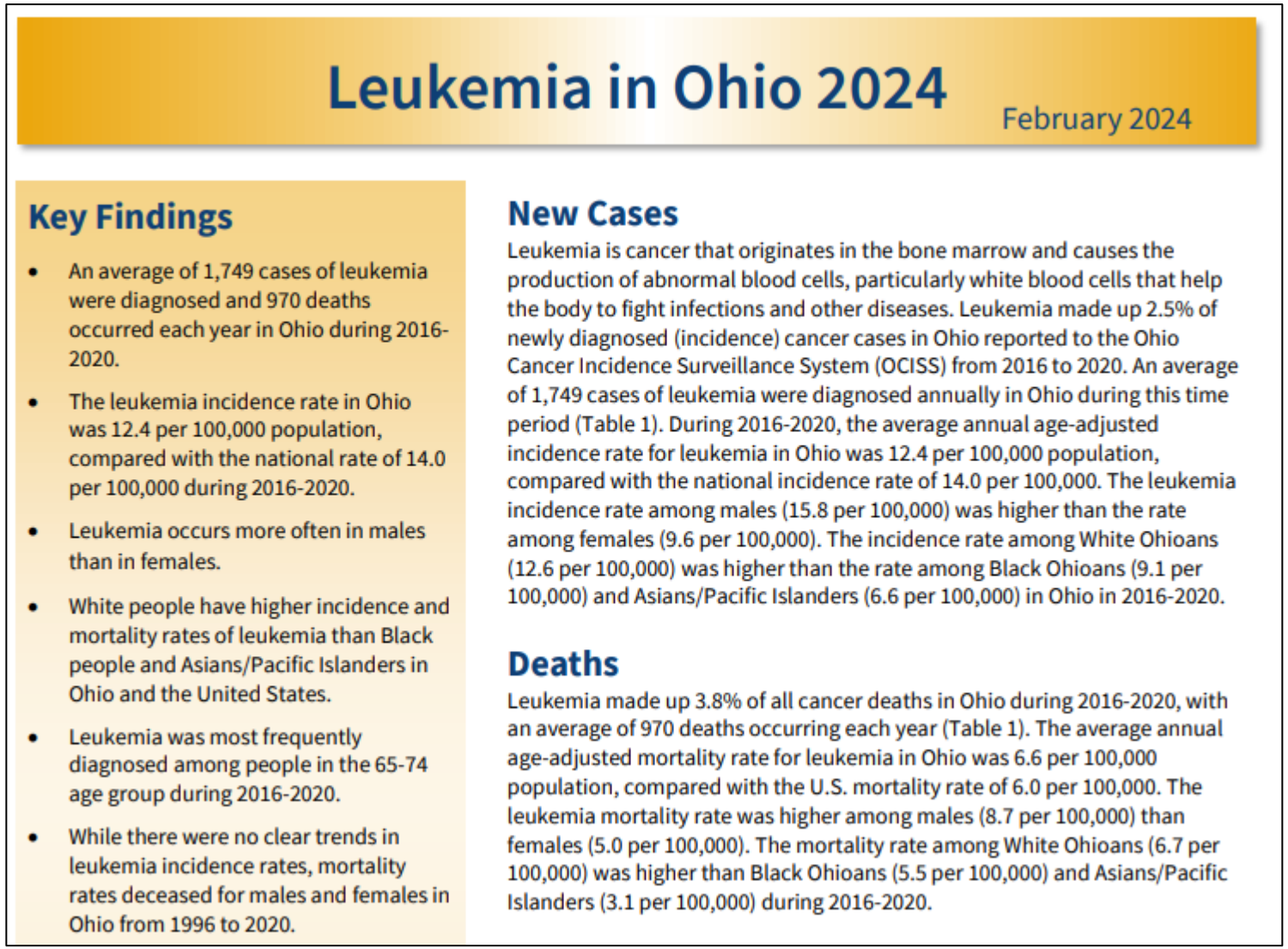


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2023; Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2023. Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

- An average of **4,537** new invasive cancer cases were diagnosed each year among Hamilton County residents in 2016-2020.
- In 2016-2020, the cancer incidence rate for all sites/types combined in Hamilton County was 471.6 per 100,000 population, compared with the Ohio rate of 465.3 per 100,000 and the U.S. rate of 438.7 per 100,000.
- Cancer incidence rates among males were higher than the rates among females in Hamilton County, Ohio, and the United States in 2016-2020.

County Reports

Department of Health



Leukemia in Ohio 2024

February 2024

Key Findings

- An average of 1,749 cases of leukemia were diagnosed and 970 deaths occurred each year in Ohio during 2016-2020.
- The leukemia incidence rate in Ohio was 12.4 per 100,000 population, compared with the national rate of 14.0 per 100,000 during 2016-2020.
- Leukemia occurs more often in males than in females.
- White people have higher incidence and mortality rates of leukemia than Black people and Asians/Pacific Islanders in Ohio and the United States.
- Leukemia was most frequently diagnosed among people in the 65-74 age group during 2016-2020.
- While there were no clear trends in leukemia incidence rates, mortality rates deceased for males and females in Ohio from 1996 to 2020.

New Cases

Leukemia is cancer that originates in the bone marrow and causes the production of abnormal blood cells, particularly white blood cells that help the body to fight infections and other diseases. Leukemia made up 2.5% of newly diagnosed (incidence) cancer cases in Ohio reported to the Ohio Cancer Incidence Surveillance System (OCISS) from 2016 to 2020. An average of 1,749 cases of leukemia were diagnosed annually in Ohio during this time period (Table 1). During 2016-2020, the average annual age-adjusted incidence rate for leukemia in Ohio was 12.4 per 100,000 population, compared with the national incidence rate of 14.0 per 100,000. The leukemia incidence rate among males (15.8 per 100,000) was higher than the rate among females (9.6 per 100,000). The incidence rate among White Ohioans (12.6 per 100,000) was higher than the rate among Black Ohioans (9.1 per 100,000) and Asians/Pacific Islanders (6.6 per 100,000) in Ohio in 2016-2020.

Deaths

Leukemia made up 3.8% of all cancer deaths in Ohio during 2016-2020, with an average of 970 deaths occurring each year (Table 1). The average annual age-adjusted mortality rate for leukemia in Ohio was 6.6 per 100,000 population, compared with the U.S. mortality rate of 6.0 per 100,000. The leukemia mortality rate was higher among males (8.7 per 100,000) than females (5.0 per 100,000). The mortality rate among White Ohioans (6.7 per 100,000) was higher than Black Ohioans (5.5 per 100,000) and Asians/Pacific Islanders (3.1 per 100,000) during 2016-2020.

Site-Specific Reports

Department of Health

Weblinks

OCISS website:

https://odh.ohio.gov/know-our-programs/ohio-cancer-incidence-surveillance-system

Data Ohio Portal:

https://data.ohio.gov/wps/portal/gov/data/

Ohio Department of Health

QUESTIONS?

Emily.Bunt@ODH.OHIO.GOV

Department of Health



Department of Health

RESEARCH RESOURCES *for* Human Population Studies

University of CINCINNATI CANCER CENTER™

University of Cincinnati • UC Health • Cincinnati Children's

Thursday, December 12, 2024 | 9:00 a.m. – 12:00 p.m.

Navigating the National Death Index



Lillian M. Ingster, PhD

Director, National Death Index
National Center for Health Statistics

Navigating the National Death Index

LILLIAN M INGSTER, PHD

Director - The National Death Index

What is the National Death Index?

It is a database of all deaths in the USA. Launched 1982.

It spans 1979 - 2023 Final Files. 2024 Early Release File should be released January 2025.

The Early Release File is a preliminary file released shortly after a data year is concluded. It is typically 94% complete nationally, and clients receive one free rerun of the Final File for that corresponding year, when it is released.

All data years are retained.

Also contains death certificate info from DoD on active-duty personnel deaths outside USA borders, back to 1979.

NDI Data Collection

Source: jurisdiction death certificates.

Includes the 50 states, NYC, DC, Puerto Rico, the USVI, Guam, American Samoa, and the Northern Marianas.

118+ million death records in the NDI. About 3.0 million added annually.

Includes first/MI/last names, father's surname (if female), SSN, month/day/year of birth, age, sex, race, marital status, state of residence, state of birth.

Purpose of the NDI

The NDI provides a MATCHING service.

Investigators can estimate survival times and calculate life expectancies.

Investigators can also calculate estimates of adverse risk for selected causes of death

NDI data have also been used for outcomes research.

What the NDI provides to clients

The NDI provides clients with date and state of death, and the death certificate number.

For clients requesting an NDI+ search, we also provide the cause(s) of death. This includes the underlying cause of death plus the multiple cause of death codes (up to 20). ICD9 or ICD10 coding (date dependent).

Note that the cause of death information is only provided for True Matches.

NDI restrictions

Only health and medical research/study purposes.

No administrative or legal purposes.

The data are confidential and may not be re-released without stripping all identifiable information, nor without permission from the NDI and the NDI Advisers.

NDI PORTAL – How to Apply

The NDI Portal launched in September 2020. It simplified the NDI application process and expedited reviews. The entire process typically takes 2-3 months.

Go to the NDI website.

1. Follow the instructions to create an account to access the NDI Portal
2. Register with SAMS
3. Fill out the NDI Application

Documents Required

1. IRB Approval Letter
2. Copy of IRB Protocol
3. Signed NDI Confidentiality Form
4. Signed Supplemental NDI Confidentiality Form(s) if needed
5. Completed NDI Application
6. After any requested modifications by NDI staff, the entire application goes for review by the NDI Advisors

Performing a search:

1. All the necessary forms plus a copy of the NDI User's Guide are provided to you as attachments in your approval letter.
2. Prepare your data file(s) as instructed in the NDI User's Guide.
3. Fill out the transmittal form, or several if you are doing multiple searches
4. Fill out the fee worksheet(s) for each search requested. Note that the fee worksheet is to help you constrain your costs, not used as a guide for search parameters.

Performing a search, cont.:

1. Exhibit 1 in the NDI User's Guide details the PII information we use to do a linkage. Chapter 4 indicates the minimum data needed to a) not have the records rejected, and b) identify a match

2. Remember that merely sending the minimum data is not desirable. Why? Because you may get multiple matches for many subjects without any way to filter out the wrong matches.

3. You will receive about 10 files of results per search. Most are small. The main ones are the Combined file and the Cause file. Consult the NDI User's Guide on how to interpret your results.

4. Contact NDI staff with additional questions or concerns

Payment

1. All search requests must be accompanied by a pay.gov receipt of payment, check payment, or a Purchase Order for the full amount.

2. Payment varies depending on the type of search selected (there are 4 types), the number of subjects, and the number of years to be searched. The initial service charge is $350, which drops to $100 for all subsequent repeat requests.

3. There are limited discounts available, but none for files under 100,000 subjects. Inquire if interested.

4. Clients are permitted up to 5 free reruns in case of error, and up to 5 free duplicate (alias) records per subject, where there is uncertainty on some information.

Search types

1. ROUTINE search – you do not know who is dead or alive. You only need the date of death, the state of death, and the death certificate number. Cost = $0.15 per person per year searched.

2. UNKNOWN search – you do not know who is dead or alive. In addition to results for a ROUTINE search, you also get the cause(s) of death, up to 20. Cost = $0.21 per person per year searched.

3. KNOWN search – all the persons in this file are deceased, but that may be all you know. You get the same results as for an UNKNOWN search. Cost = $5.00 per person. The number of years is irrelevant.

4. CERTIFICATE search – a specialized category seldom used. Intended for clients who obtain the death certificate information directly from their state Vital Registrar's Office. But they need the ICD codes for the causes of death, which the state does not provide. Cost = $2.50 per person.

Examples of NDI clients

Hospitals and clinics

Health insurers and managed care organizations

State health departments

Pharmaceutical companies

Oil & chemical industry

Academia

Disease registries

VA and DoD

Other federal agencies

What databases have linked to the NDI?

- Occupational health cohorts
- Disease and non-disease registries
- Comparative effectiveness studies – can include outcomes research
- Post-marketing drug/medical device surveillance
- Clinical Trials
- General population studies – one or more communities
- National surveys

Contact Information for the NDI

301-458-4444

ndi@cdc.gov

For the NDI Director (currently Lillian Ingster)

301-458-4286

lxi0@cdc.gov

RESEARCH RESOURCES *for* Human Population Studies

University of CINCINNATI CANCER CENTER™

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Thursday, December 12, 2024 | 9:00 a.m. – 12:00 p.m.

Requesting Biospecimens from the Tumor Bank



Kelsey L. Dillehay McKillip, PhD

Associate Professor
Pathology & Laboratory Medicine
University of Cincinnati College of Medicine

Leveraging Biospecimens and Associated Clinical Data from the UC Cancer Center Biospecimen Shared Resource (UCCC BSR)

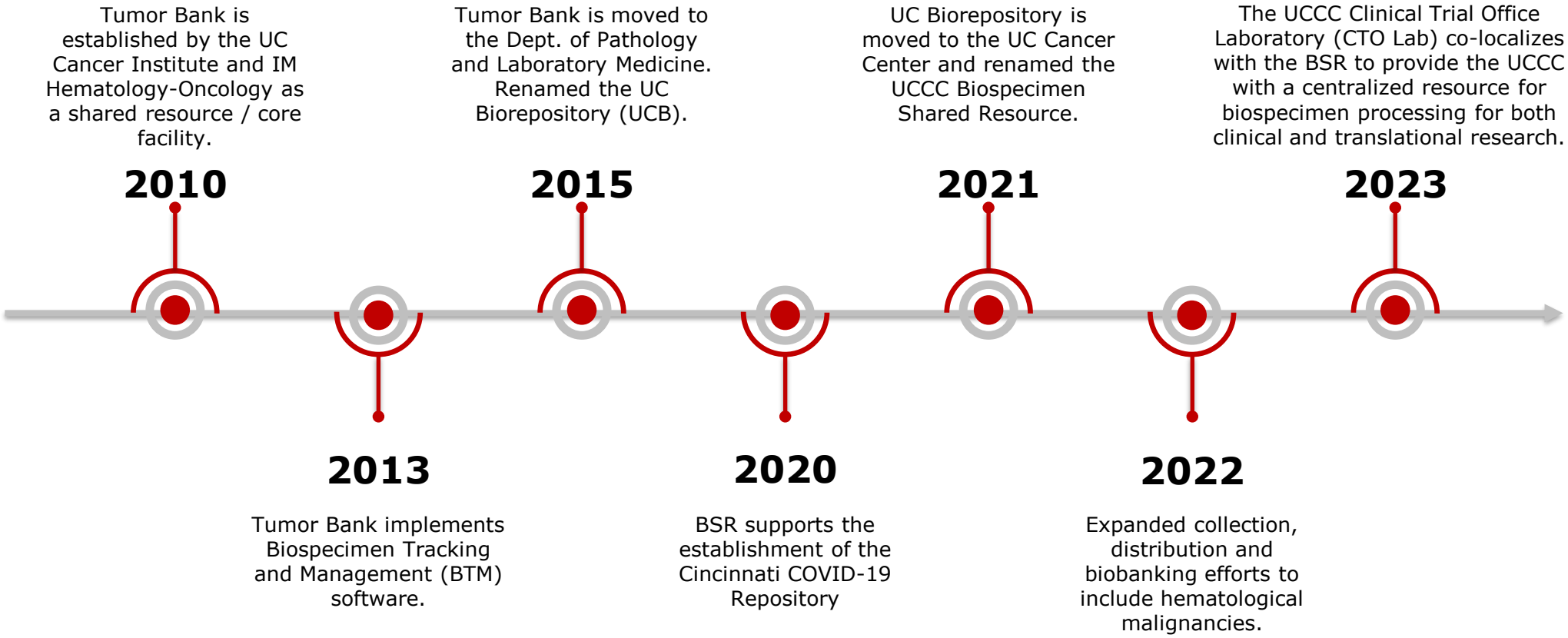
Kelsey Dillehay McKillip, PhD
Associate Professor, Pathology and Laboratory Medicine
Director, UC Cancer Center Biospecimen Shared Resource

12.12.2024

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Mission

- The UC Cancer Center Biospecimen Shared Resource (UCCC BSR) is a human biospecimen procurement and biobanking core facility that collects, processes, stores and dispenses high-quality, appropriately consented human biospecimens and associated clinical data to accelerate biomedical research and help translate research innovations into patient care.



Types of Biorepositories

Table 2. Comparisons of Specific Types of Biorepositories

Type of biorepository	*Biobank, typical*	*Epidemiological, population-based, or environmental*	*Clinical trial*	*Prospective procurement*	*Combination model*
1) Usual types of specimens	Solid tissues and biofluids; Specimens may vary with goals of the biobank; Frequently only FFPE tissue and biofluids are available	Usually only biofluids – blood components and sometimes urine.	Solid tissues and biofluids depending on requirements of the clinical study.	Solid tissues and biofluids based on requests of investigators; Specimens can be provided fresh (non-frozen).	Specimens requested by investigators; Biobanked specimens collected, processed and stored based on biorepository goals.
2) Specimen collection	Collected in a medical facility for future research; Usually disease-based.	Usually collected from individuals without disease, but can include specimens from individuals with an increased risk for a disease; Collected for future research; Longitudinal samples sometimes available.	Collected in a medical facility in association with therapeutic interventions for disease.	Collected at a medical facility based on the specific needs and requests of investigators.	Collected for future research or at request of investigators; Many specimens are rapidly distributed, but some are banked.
3) Processing, storage and distribution	Processed via a SOP; Stored until distributed to an investigator.	Processed by a SOP; Stored for long periods until an endpoint is reached (e.g., development of a disease or study of an environmental agent); Distribution usually is restricted to research on specific issues; Tissues not associated with an endpoint (e.g., development of a disease) frequently are not initially made available for distribution.	Processed by a SOP; Stored until distributed to an investigator; Use may be restricted due to the informed consent.	Processed according to investigator requests; Distributed soon after collection; Specimens have to be collected so are not available when first requested.	Processed based on a SOP (bank) or according to investigator request; Distributed to a requesting investigator or stored in bank until requested; Strong emphasis on distribution.
4) Data	Extensive data may be available upon request including outcome.	Extensive data available frequently based upon interview of participants; Usually participants are healthy; Outcome (e.g., development of a disease) will be variable.	Wide range of data available based on clinical trial; Data on response to intervention are available.	Demographic data immediately available; Clinical and other data available upon review of health record; Clinical data on outcome not available until outcome occurs.	Data models vary based on goals of biobanking component; Demographic data available and other data via health record; Outcome of prospective component not available when specimens first requested.
5) Advantages	Specimens and data including outcome usually are immediately available.	Longitudinal specimens may be available; Extensive data on individual can be provided.	Specimens and extensive clinical data including outcome immediately available; Response to therapies immediately available.	Specimens are collected and processed to meet the specific needs of investigators; Fresh (non-frozen) specimens available; Most specimens utilized; No long-term storage artifacts.	Prospective specimens collected and processed based on investigator needs; Banked specimens and outcomes may be immediately available; Prospective specimens will not have long-term storage artifacts.
6) Disadvantages	Many specimens are not utilized; Specimens may not meet needs of the investigator; Potential artifacts and molecular degradation based on long-term storage.	Many specimens are not utilized; Specimens subject to artifacts and molecular degradation on long-term storage.	Many specimens are not utilized; Original consent may limit use; potential specimen artifacts and degradation on long-term storage.	Specimens and outcome data not immediately available.	Specimen and outcome data not immediately available on prospective specimens; Potential artifacts and degradation of banked specimens on long-term storage; Banked specimens may not be utilized.

Grizzle WE, et al. Quality management of biorepositories. *Biopreserv Biobank*. 2015

Current Strategic Efforts

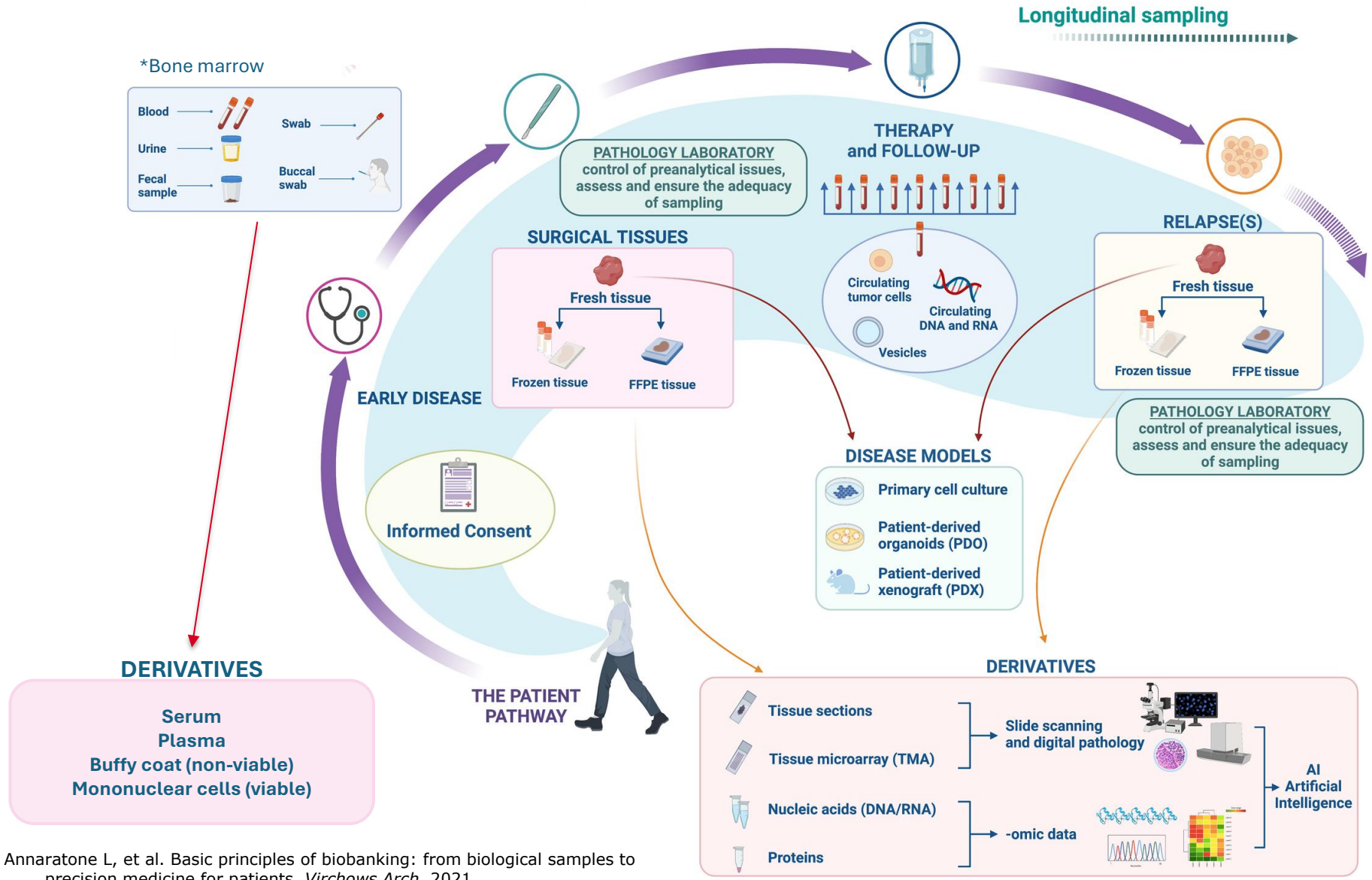
- **The UCCC BSR is a disease-focused biobank**

- **Pre-operative blood and tissue (tumor and paired normal):**
  - Brain cancer
  - Breast cancer
  - GI cancer
  - Head and neck cancer
  - Lung cancer

- **Newly diagnosed and recurrent/refractory blood and bone marrow:**
  - Chronic lymphocytic leukemia (CLL)
  - Chronic myeloid leukemia (CML)
  - Acute lymphoblastic leukemia (ALL)
  - Acute myeloid leukemia (AML)
  - Myelodysplastic syndromes (MDS)
  - Multiple myeloma (MM)

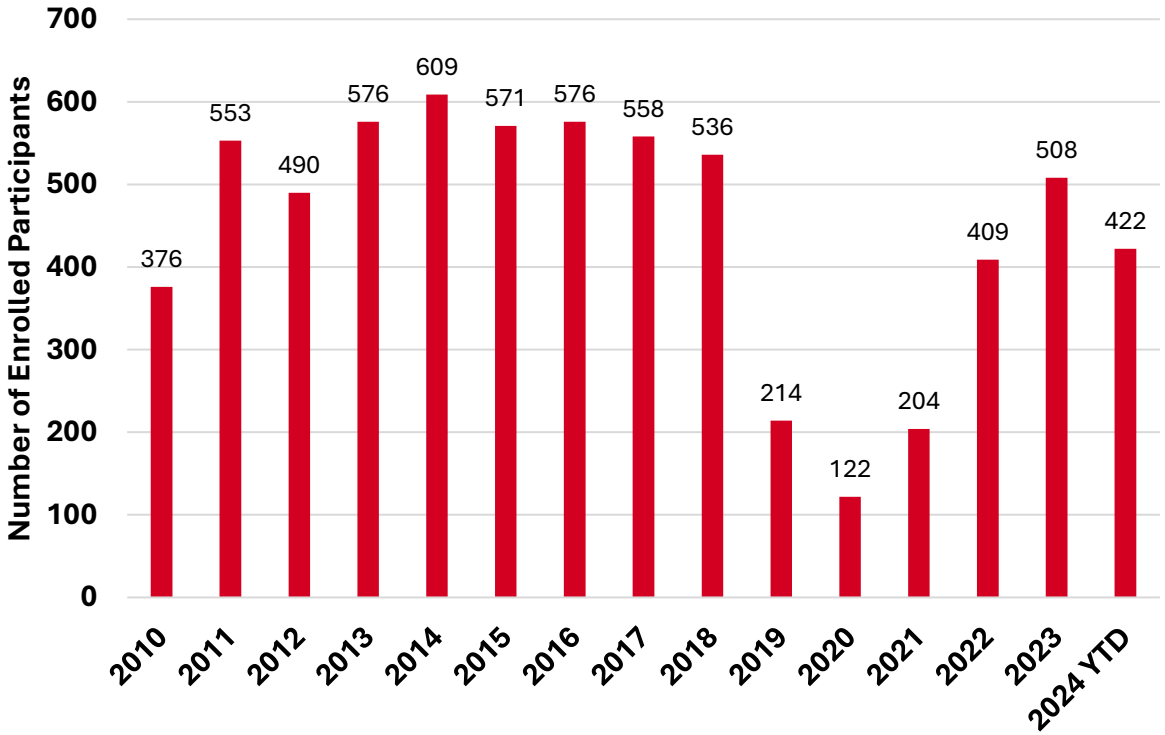
- **Any enrollment and sample collection events outside of these strategic areas are performed on an investigator / project basis**
  - Samples can be collected and dispensed fresh to investigators or processed and stored by the UCCC BSR.

Biobanking Overview



Adapted from: Annaratone L, et al. Basic principles of biobanking: from biological samples to precision medicine for patients. *Virchows Arch.* 2021

Annual Enrollment and Participant Demographics



Average 450 enrollments each year

Race	Female	Male	Total	Percent of total
American Indian or Alaska Native	4	2	6	0.07%
Asian	30	46	76	0.92%
Back or African American	583	531	1114	13.45%
Native Hawaiian or Other Pacific Islander	1	3	4	0.05%
White	2855	4041	6896	83.23%
Unknown / Other	72	117	189	2.28%
Total	3545	4740		
Percent of total	42.79%	57.21%		

Available Sample Types

	Blood	Bone Marrow	Urine	Tissue
Brain cancers	**309**	**0**	**0**	**674**
Gliomas, glioneuronal tumors, and neuronal tumors	183	0	0	357
Meningiomas	80	0	0	204
Schwannomas	39	0	0	76
Breast cancer	**154**	**0**	**0**	**201**
Gastrointestinal cancers	**507**	**0**	**0**	**492**
Pancreatic cancer	250	0	0	207
Colon and rectum cancer	127	0	0	166
Liver cancer	101	0	0	93
Appendiceal cancer	29	0	0	26
Genitourinary cancers	**724**	**0**	**586**	**510**
Prostate cancer	497	0	437	279
Kidney cancer	181	0	118	192
Bladder cancer	36	0	25	26
Urinary Tract Cancer	10	0	6	13
Gynecologic cancers	**110**	**0**	**0**	**126**
Endometrial cancer	76	0	0	81
Ovarian cancer	34	0	0	45
Head and neck cancers	**938**	**0**	**0**	**1301**
Oral cancer	383	0	0	458
Pharyngeal cancer	186	0	0	319
Laryngeal Cancer	183	0	0	284
Nonmelanoma skin cancer	118	0	0	138
Salivary gland cancer	42	0	0	60
Paranasal sinuses and nasal cavity	26	0	0	42
Hematological malignancies	**311**	**235**	**0**	**1**
Myelodysplastic syndromes	41	49	0	0
Acute myeloid leukemia	113	112	0	0
Chronic myeloid leukemia	10	10	0	0
Acute lymphocytic leukemia	23	21	0	0
Chronic lymphocytic leukemia	115	33	0	1
Multiple myeloma	9	10	0	0
Lung cancer	**877**	**0**	**0**	**669**
Melanoma	**47**	**0**	**0**	**84**

Note that this data is not comprehensive and only reports data for some of the more common sample types stored in the BSR.

Available Sample Types

- **Pre-operative blood and tissue are routinely collected at the time of surgery. This includes patients that are newly diagnosed, at the time of recurrence, or those with metastatic disease.**

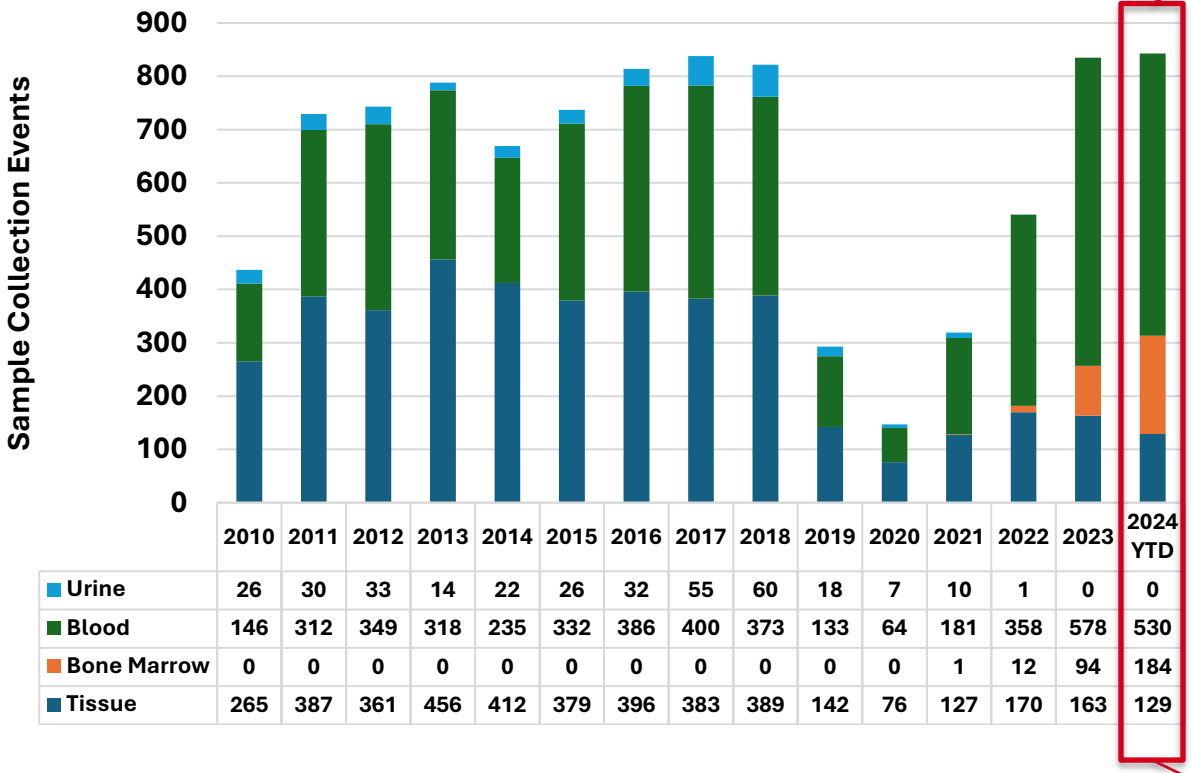
- **Tissue (tumor and adjacent normal):**
  - Fresh
  - Frozen
  - OCT-embedded (frozen tissue sections)
  - Formalin-fixed paraffin-embedded (FFPE tissue sections)

- **Peripheral blood (fresh or frozen):**
  - Whole blood
  - Plasma
  - Serum
  - Buffy coat / WBC pellets (non-viable)
  - Cryopreserved mononuclear cells (viable)

- **Bone marrow (fresh or frozen):**
  - Plasma
  - Cryopreserved mononuclear cells (viable)

- **Urine (fresh or frozen)**
  - Frozen sample availability is limited to GU cancers

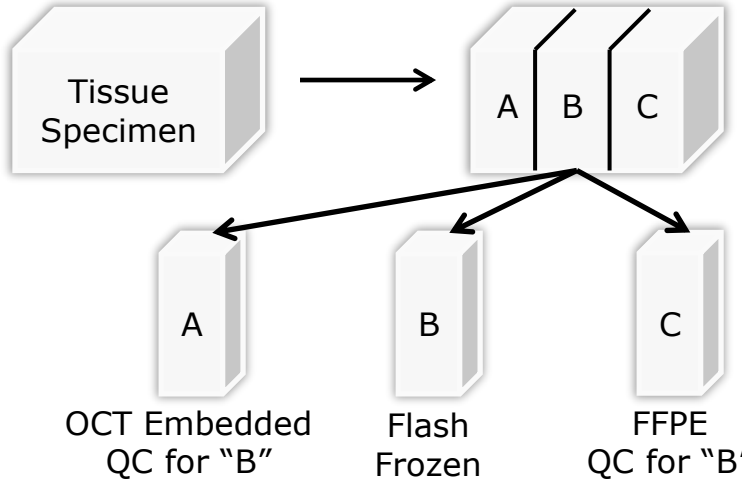
Annual Biospecimen Collection Events



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 YTD
Urine	26	30	33	14	22	26	32	55	60	18	7	10	1	0	0
Blood	146	312	349	318	235	332	386	400	373	133	64	181	358	578	530
Bone Marrow	0	0	0	0	0	0	0	0	0	0	0	1	12	94	184
Tissue	265	387	361	456	412	379	396	383	389	142	76	127	170	163	129

Average 640 sample collection events each year

>16,000 sample aliquots





Plasma

Buffy coat

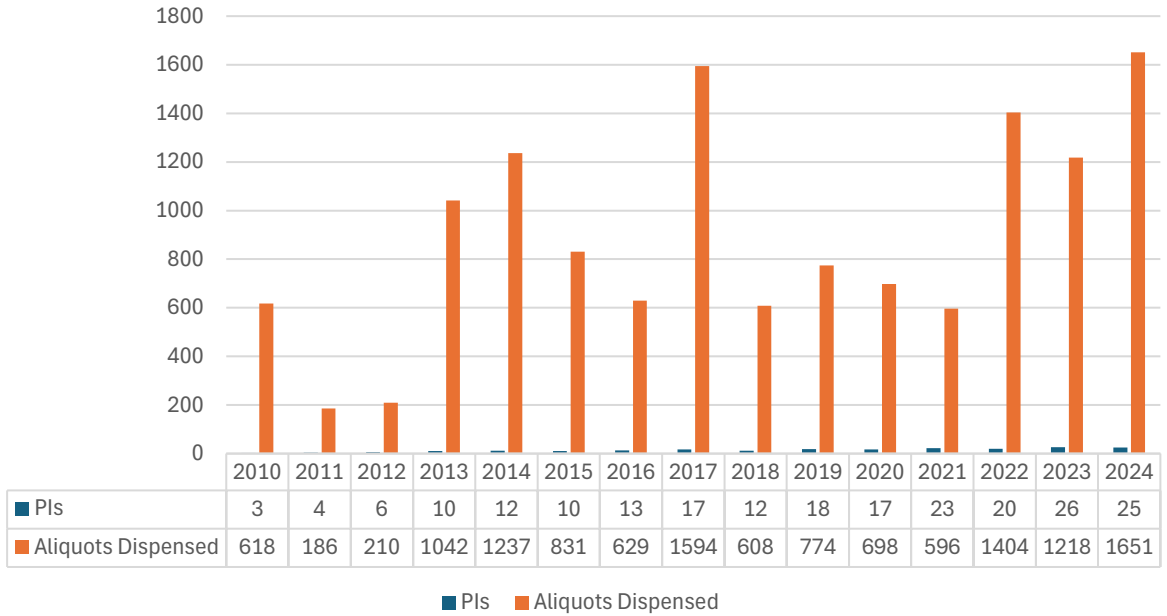
Our IRB-approved protocols also give us access to archived diagnostic tissue blocks stored in Pathology.

Corresponding Clinical Data

- **The UCCC BSR routinely captures the following clinical data and provides this information at no cost:**
  - Patient sex
  - Patient race (ethnicity when available)
  - Age at enrollment / sample collection
  - Primary diagnosis
  - Histologic subtype
  - Pathology staging
  - Pathology grade
  - Clinical staging
  - Some biomarkers (e.g., ER/PR status)

- **Additional clinical data available through the participant's electronic health records is collected on an as needed / project basis for an additional fee:**
  - Risk factors (e.g., smoking status, viral infections)
  - Comorbidities
  - Treatment information
  - Laboratory test results
  - Genomic data
  - Outcome data

Sample Utilization and Impact



- **Cancer models and cell lines**
  - Dispensing fresh glioblastoma tissue and breast cancer tissue to for the development of PDO and PDX models
- **Immune cell functional analyses**
- **Proteomics and metabolomics**
- **Genomics**
  - Metagenomics
  - scRNA-seq
  - Spatial transcriptomics

Copper drives remodeling of metabolic state and progression of clear cell renal cell carcinoma

Megan E. Bischoff; Behrouz Shamsaei; Juechen Yang; Dina Secic; Bhargav Vemuri; Julie A. Reisz; Angelo D'Alessandro; Caterina Bartolacci; Rafal Adamczak; Lucas Schmidt; Jiang Wang; Amelia Martines; Jahnavi Venkat; James Brugarolas; Jarek Meller; Jo

HDAC1 and HDAC6 are essential for driving growth in IDH1 mutant glioma

Matthew C. Garrett, Rebecca Albano, Troy Carnwath, Lubayna Elahi, Catherine A. Behrmann, Merissa Pemberton, Daniel Woo, Eric O'Brien, Brett VanCauwenbergh, John Perentesis, Sanjit Shah, Matthew nblum, David R. Plas & Q.

Analysis of the fecal metagenome in long-term survivors of pancreas cancer

Jordan Kharofa [1], David Haslam [2], Rac
Kyle Wang [1], Hope Esslinger [1], Olugbe
Syed Ahmad [5], Senu Apewokin [3]

Multimodal assessment of high-risk human papillomavirus in sinonasal squamous cell carcinoma

Anna Zhou [a 1], Anish Sharma [a 1], Damaris Kuhnell [b], Benjamin H. Hinrichs [c], Ady Kendler [c],

CRAG: de novo characterization of cell-free DNA fragmentation hotspots in plasma whole-genome sequencing

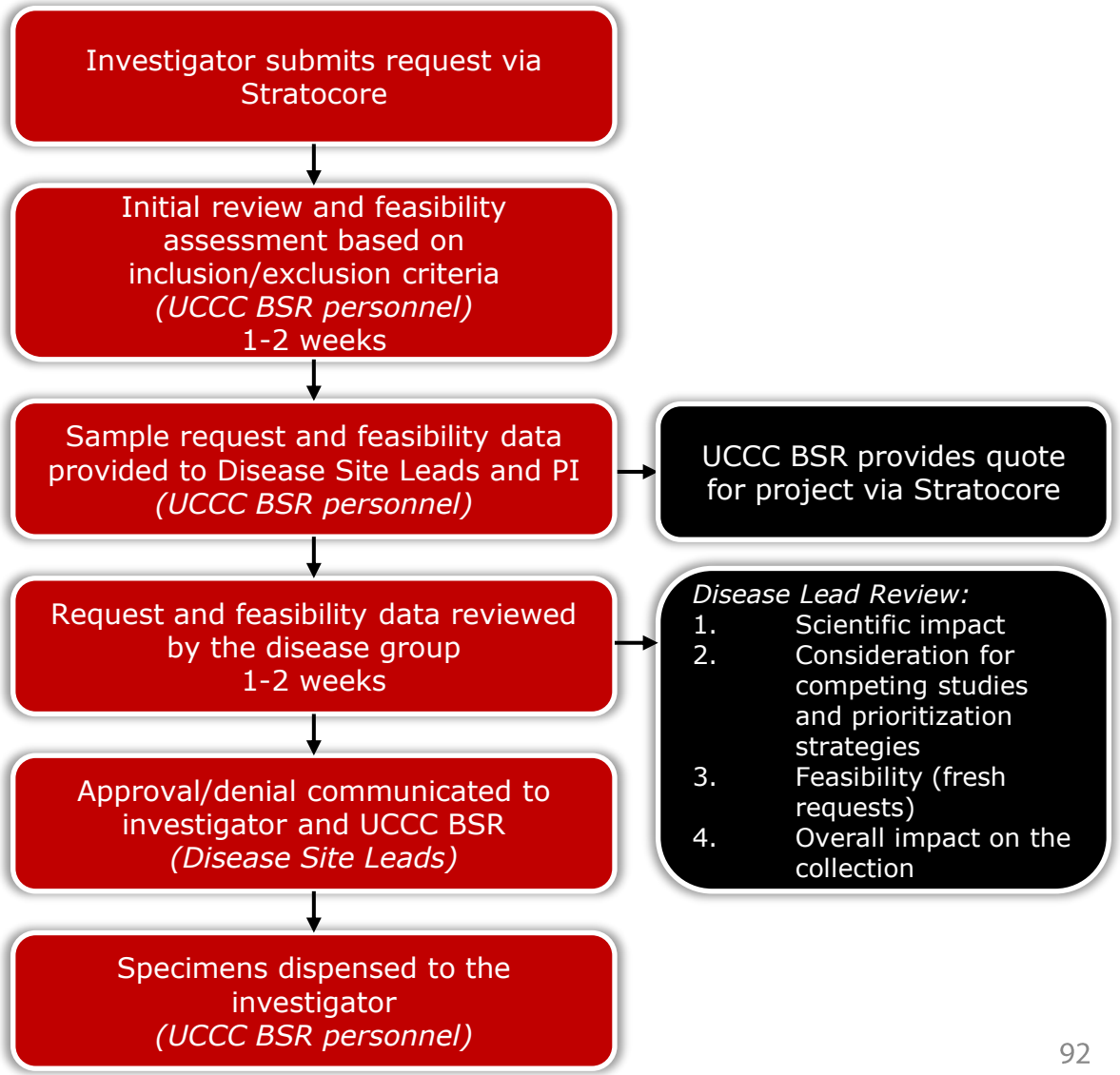
Xionghui Zhou, Haizi

Assessing the Reliability and Positive Predictive Value of p16 as a Surrogate for Human Papillomavirus-Mediated E6/7 mRNA Expression in Squamous Cell Carcinoma of the Anal Canal

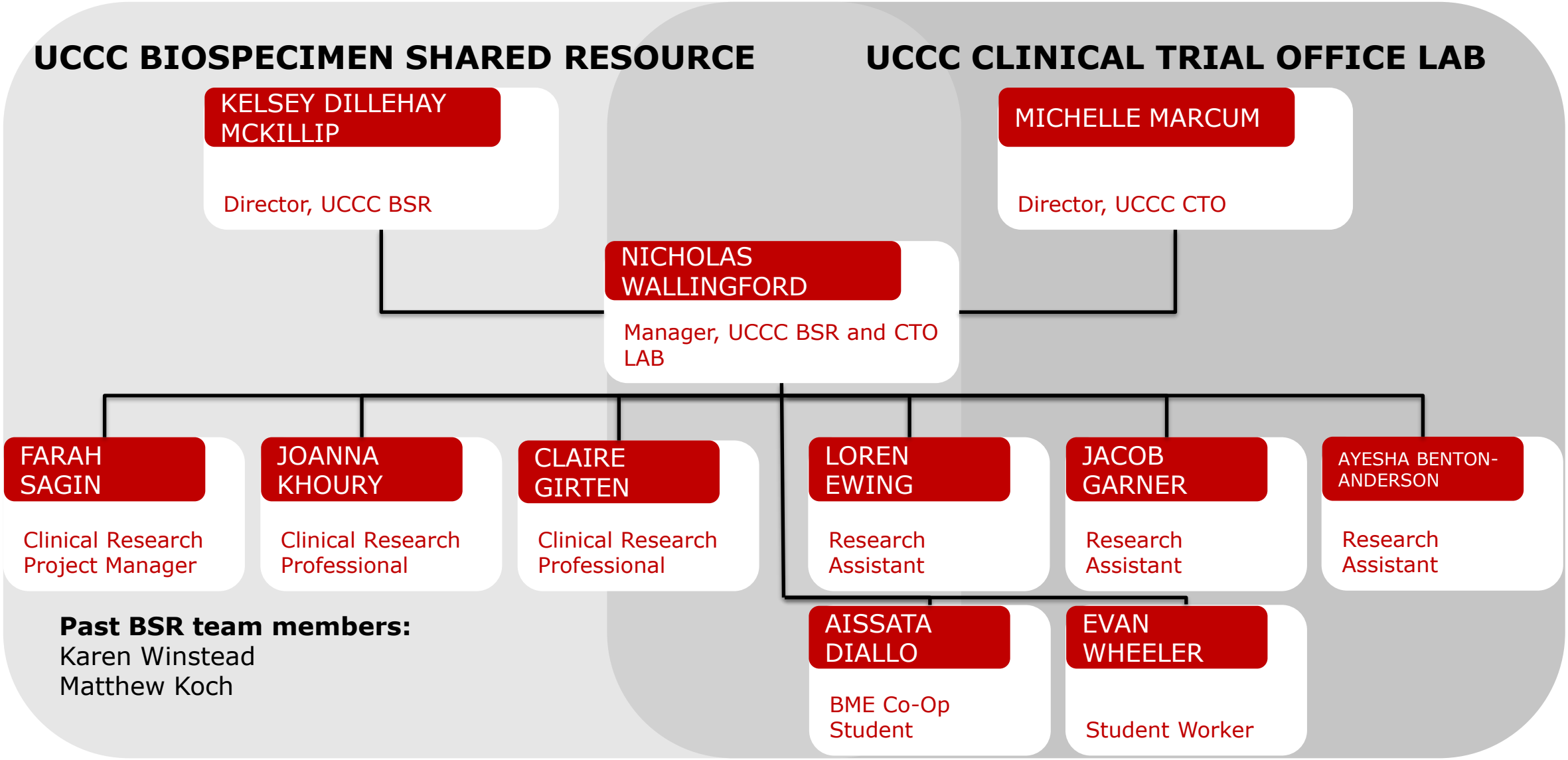
Andrew J Frankart [1], Benjamin E Criss [2], Kelsey Dillehay McKillip [2], Trisha Wise-Draper [3], Vinita Takiar [1], Jordan Kharofa [1]

New Project / Sample Requests

- Please contact the UCCC BSR when conceptualizing new projects/grants so we can provide you with an estimate for your budget and provide a letter of support
- Requests for services and banked biospecimens are submitted through Stratocore
  - https://ppms.us/uc/start/
  - Please complete the UCCC BSR Project Request form
- New project requests are reviewed and approved by UCCC Disease Site Lead(s).



Team Acknowledgements



Past BSR team members:
Karen Winstead
Matthew Koch

University of CINCINNATI CANCER CENTER™

University of Cincinnati • UC Health • Cincinnati Children's

UC Cancer Center Biospecimen Shared Resource

Website: https://med.uc.edu/research/core/Index/195/Facility/
Email: uccitb@ucmail.uc.edu
Phone: 513-558-7111

Kelsey Dillehay McKillip, PhD
Director, UC Cancer Center Biospecimen Shared Resource
Email: dillehky@ucmail.uc.edu
Phone: 513-558-6010

Questions?

RESEARCH RESOURCES *for* Human Population Studies

University of CINCINNATI CANCER CENTER™

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Thursday, December 12, 2024 | 9:00 a.m. – 12:00 p.m.

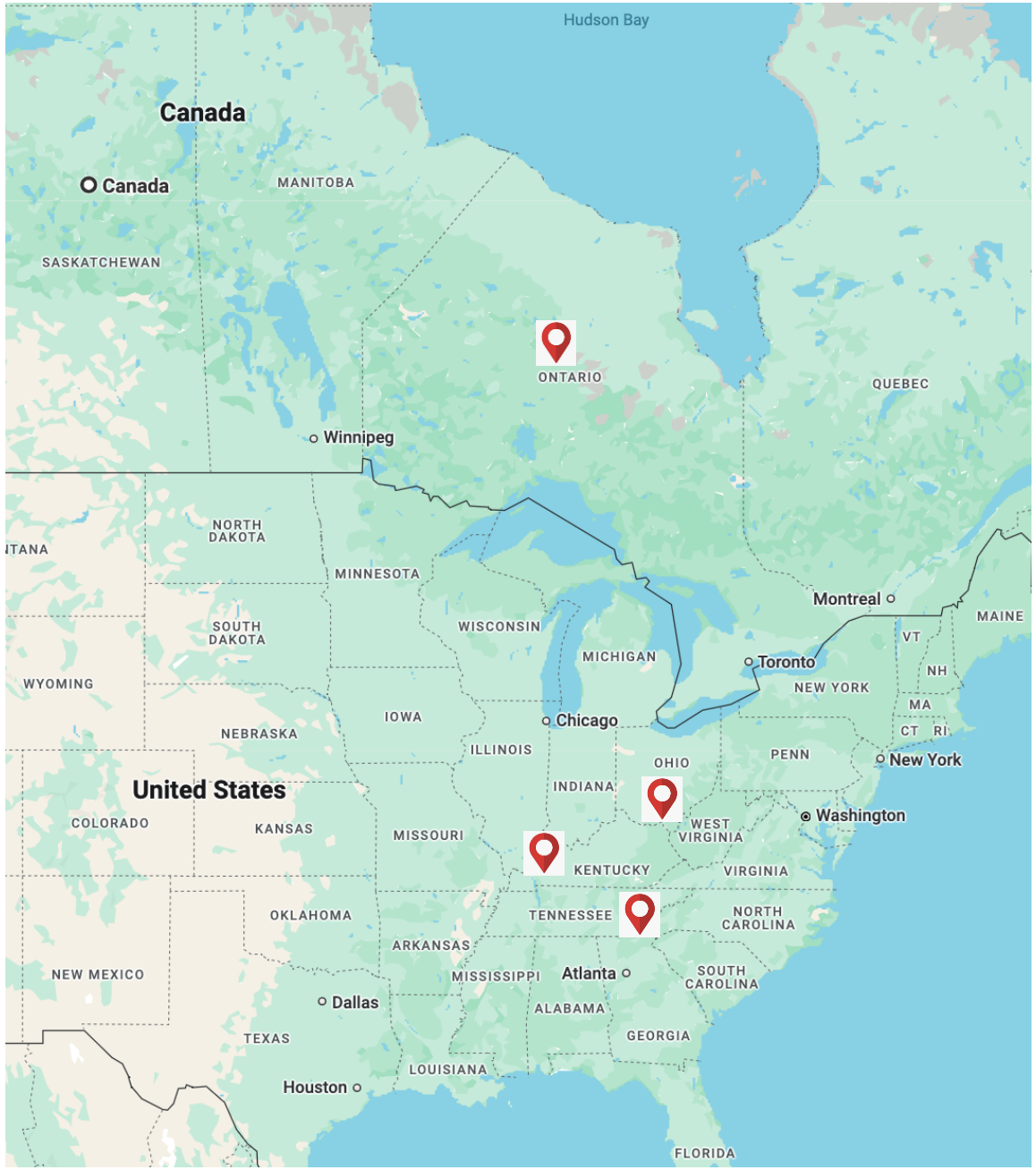
Obtaining Services from the Biostatistics and Informatics Shared Resource



Shesh N. Rai, PhD

Professor
Biostatistics, Health Informatics & Data Sciences
University of Cincinnati College of Medicine

Dr. Shesh Rai
Director, Biostatistics and Informatics Shared Resource (BISR)
University of Cincinnati Cancer Center (UCCC)
Director, Cancer Data Science Center (CDSC)
Professor, Biostatistics, Health Informatics and Data Sciences (BHIDS)
University of Cincinnati College of Medicine



- University of Waterloo, Canada
- University of Ottawa, Canada
- St. Jude Children's Research Hospital
- University of Louisville
- University of Cincinnati – Since August 15, 2022

Research Interest:

- Bioinformatics
- Clinical Informatics
- Preclinical and Clinical Studies
- Longitudinal Studies
- Epidemiological Studies
- Quantitative Risk Assessment

Biostatistics and Informatics Shared Resource (BISR)



Key Objectives

Overall Support

- Design
- Analysis
- Interpret findings

in

- ✓ Basic science
- ✓ Translational
- ✓ Clinical
- ✓ Population health
- ✓ Epidemiology

Biostatistics Bioinformatics

State-of-the-art analyses from

- Raw (eg. Fastq) data
- Normalized data

for

- ✓ Multi-omics data
- ✓ Single-cell data
- ✓ 3D genomic data

Education/ Training

- Investigators, Staffs, Trainees

to

- Apply Novel or Existing methods

in

- ✓ Clinical trials
- ✓ Omics data analyses

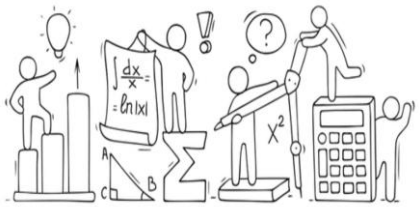
Methods development

- Develop

robust and efficient methods as needed in

- ✓ Biostatistics
- ✓ Bioinformatics

Biostatistics and Informatics Shared Resource (BISR)



Services

Consultation on
generating hypotheses
based on background data

Design and analyses of
clinical studies
(retrospective, prospective), cross sectional,
cross-over and longitudinal studies

Sample-size justification in preclinical studies,
High-throughput analyses (RNA-Seq,
Proteomics, Metabolomics and Microbiome),
FDR correction, classification and pathway
analysis.

Statistical consideration for protocols and
grants.

Study Type related Tutorials

- Existing Databases
  - EPIC, NCDB,NHANES, dbGaP, etc.
- Epi
  - Cohort, case-control etc.
- Retrospective
- Prospective
  - Clinical study
  - Clinical Trials (Phase I-Phase IV)

Biostatistics and Informatics Shared Resource (BISR)



Contact Key Personnel

Shesh Rai
Director
raise@ucmail.uc.edu | Shesh.Rai@uc.edu

Jianmin Pan, PhD
Research Scientist
panjm@ucmail.uc.edu
raijp@ucmail.uc.edu

Xiaoyong Wu, PhD
Research Scientist
wu2xo@ucmail.uc.edu

Sarmistha Das, PhD
Research Scientist
sarmistha.das@ucmail.uc.edu

Anand Seth, PhD
Research Manager
sethad@ucmail.uc.edu

Christy Pinkston, MS
Research Associate
pinkstca@ucmail.uc.edu

Jayesh Rai, MS
Research Associate

How to Contact?

Initiate a new project request:
PPMS for the BISR Facility: https://ppms.us/uc/login/?pf=18 or Scan the code

BISR Group Email: CancerDataSC@ucmail.uc.edu

Biostatistics and Informatics Shared Resource (BISR)



Neither!

Fee structure

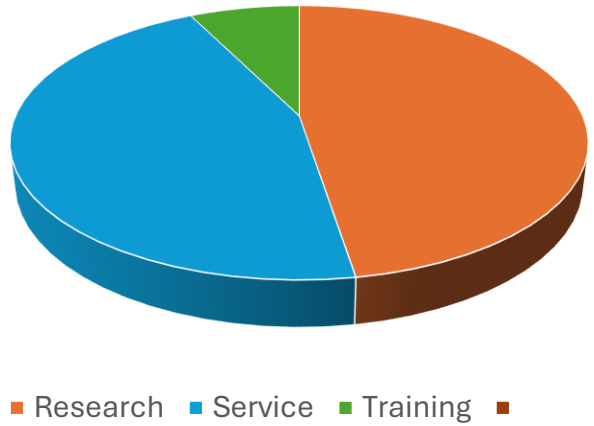
✓ Consistent with other NCI cancer centers, BISR uses a *"Consultation and grant support"* model with funding commensurate with the level of service needed.

✓ *No upfront cost to UCCC investigator* with appropriate consideration for collaborative grant support.

Project Type	Small-size Project			Mid-size Project			Large-size Project		
	Time	Rate	Cost	Time	Rate	Cost	Time	Rate	Cost
	HR	$/HR	$	HR	$/HR	$	HR	$/HR	$
UCCC	30	0	0	40	0	0	60	0	0
UC Client	30	120	3600	40	120	4800	60	120	7200
Non-Profit Client	30	160	4800	40	160	6400	60	160	9600
For-Profit Client	30	240	7200	40	240	9600	60	240	14400

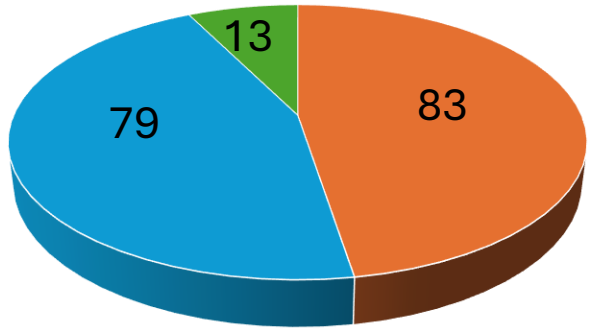
Yearly Report: July 1, 2023 - June 30, 2024

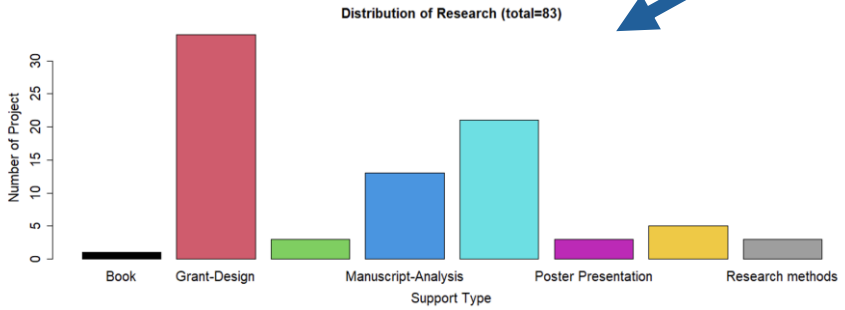
Project Type	Support Type	Number of Project
Research (83)	Book	1
	Grant-Design	34
	Grant-Methodology	3
	Manuscript-Analysis	13
	Other-Analysis	21
	Poster Presentation	3
	Protocol-Design	5
	Research methods	3
Service (79)	Manuscript Review	9
	Protocol Review	70
Teaching/Graduate Supervision /Training (13)	Graduate Supervision	3
	Oncology-Biostatistics Journal Club	7
	Primary Instructor	2
	Training	1
		175
*146 collaboration among 175 projects		

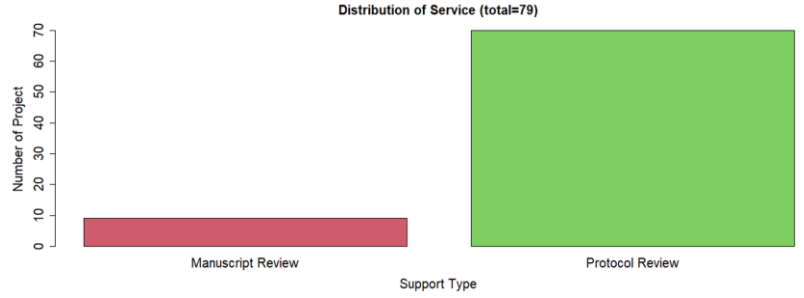


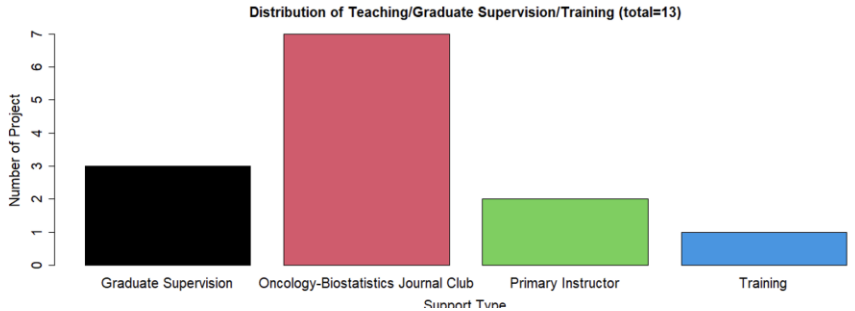
Summary of BISR activities in FY24

Over 175 projects and Service to support 105 PI and Co-Is



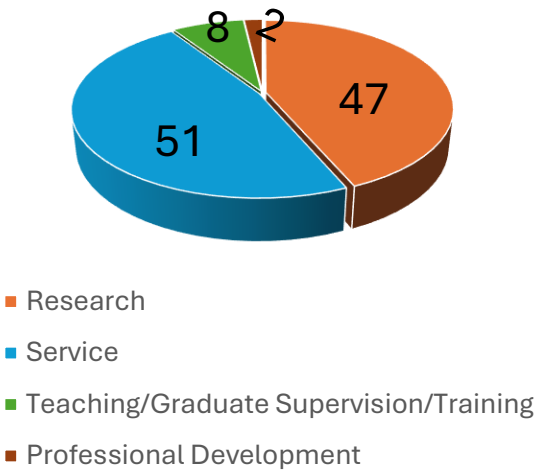






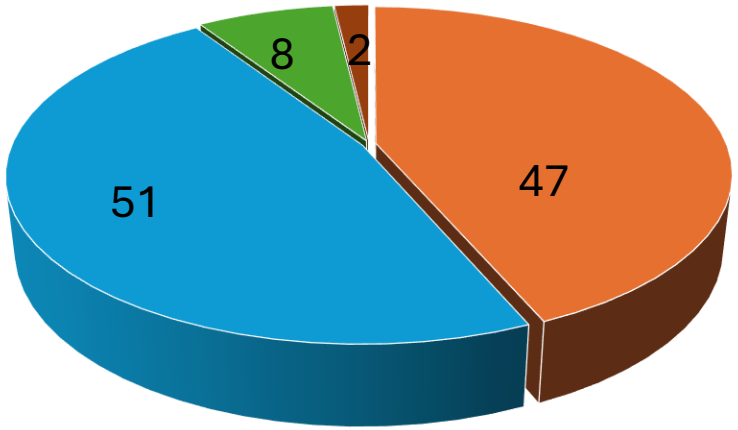
Current Report: July 1, 2024 - November 11, 2024

Project Type	Support Type	Number of Project
Professional Development (2)	Conference	1
	Software Development	1
Research (47)	Grant-Analysis	2
	Grant-Design	10
	Grant-Methodology	1
	Grant-Review	1
	Manuscript-Analysis	24
	Other-Analysis	4
	Research Methods	5
Service (51)	Grant-Review	1
	Manuscript-Review	5
	Protocol Review	43
	Protocol-Design	2
Teaching/Graduate Supervision /Training (8)	Oncology-Biostatistics Journal Club	3
	Teaching /Training	5
Total		108
*85 collaboration among 108 projects		

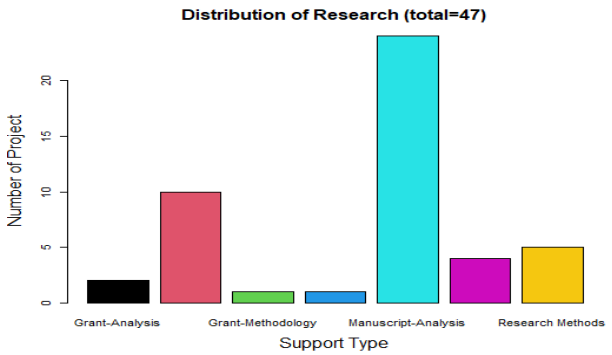


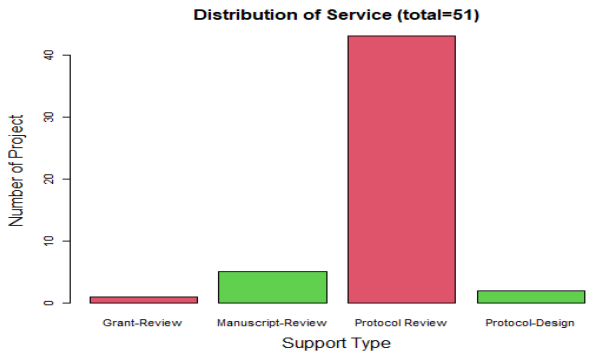
Summary of current BISR activities in FY25

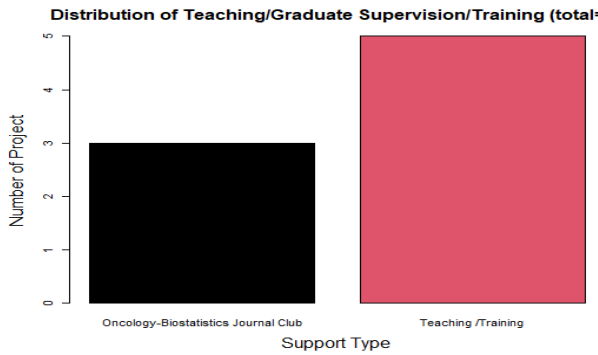
Over 108 projects and Service to support 85 PIs and Co-PIs

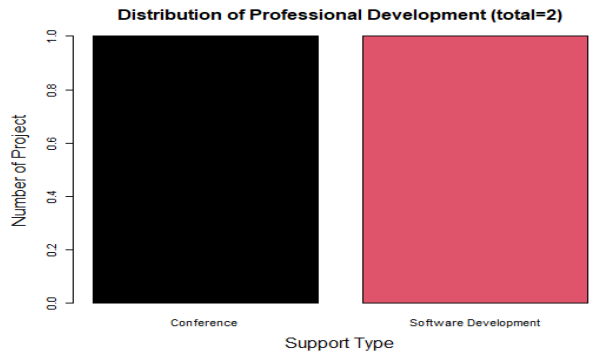


Research Service Teaching/Graduate Supervision/Training Professional Development









Biostatistics and Informatics Shared Resource (BISR)

Prioritize

Public Health, Bioinformatics and Biostatistics

Population Studies

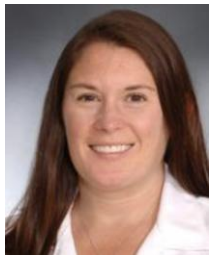
Data Science

- Grants
- Analyses to meet deadlines (abstracts, manuscript revisions)
- Protocol Preparation
- New Analysis
- Methodological advances

Grants

2022-present


Dr John Byrd


Dr Erin Hertlein


Dr Ola Elgamal


Dr Jordan Kharofa


Dr Vinita Takiar


Dr Susanne Wells


Dr Trisha Wise-Draper

Public Health, Bioinformatics and Biostatistics

Grant Name	Timeline	Status	PI/Co-PI	CDSC team	Focus area
Department of Defense Impact Award	09/30/24-09/29/27	Funded	Hertlein	Rai SN, Pan J	Leukemia
SPORE		Resubmission	Wise-Draper, Wells	Rai SN, Pan J, Das S	Head and neck squamous cell carcinoma (HNSCC)
NIH R01	04/01/25 – 03/31/30	Resubmission	Byrd, Hertlein, Woyach, Elgamal	Rai SN, Pan J, Rai J	Leukemia
DOD Rare Cancers	04/01/25 – 03/31/30	Pending	Byrd, Hertlein	Rai SN, Das S	Chronic myelomonocytic leukemia (CMML)
PCORI		Submitted	Takiar, Kharofa	Rai SN, Pan J, Wu X	Head and neck squamous cell carcinoma (HNSCC)
R21		Submitted	Byrd, Hertlein, Elgamal	Rai SN, Pan J, Das S	Leukemia

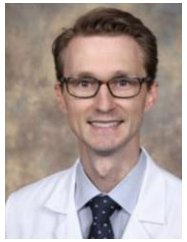
More Grants…

2022-present

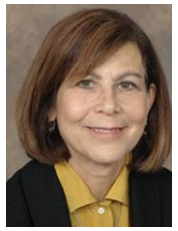
More submitted/resubmitted

Internal grants:
- R01 (PI Weber)
- R01, DOD (PI Kotagiri)
- R01, R21 (PI Van Haren)
- R01, DOD (PI Nayak)
- R01 (PI Waters)
- DOD (PI Hertlein, Byrd)
- R21 (PI Lee, Butsch-Kovacic)
- UCCC (PI Erickson)
- UCCC (PI Shatz)
- UCCC (PI Ghosh) and more…

External grants:
- R01 (PI Miles; Cincinnati Children's)
- Cardiology (University of Louisville)


Dr Robert Van Haren


Dr Sriparna Ghosh


Dr Rhonna Shatz

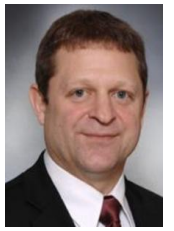

Dr Melinda Butsch-Kovacic


Dr Melissa Erickson


Dr Seung-Yeon Lee

Population Studies


Dr Nalinikanth Kotagiri


Dr Andrew Waters


Dr Ramesh Nayak

Public Health, Bioinformatics and Biostatistics


Dr Georg Weber

Data Science

Selected Publications

Max IF = 6.3
Average IF ~ 4.21

Public Health, Bioinformatics and Biostatistics

- Elgamal, OA, …**Rai J, Pan J, Rai SN,** Byrd JC. Pyrimidine depletion … in acute myeloid leukemia (AML). *JCI Insight*. 2024. IF=**6.3**

- Fobare S, … **Pan J, Rai J, Rai SN**. … Hertlein E. Inhibition of Enhancer of Zeste Homolog 2 in Murine Models of AML. *Cancers*. 2024. IF=**5.2**

- Clayton J. … **Pan J, Rai J, Rai SN,** … Sandra L. Starnes. Declining Surgery? Analysis of Early-Stage Non-Small Cell Lung Cancer. Submitted to "*The Annals of Thoracic Surgery*". 2024. IF=**3.8**

- **Das, S. and Rai, SN.** Effect of miRNA on Gene Regulation - Role of Super-Enhancers. *Non-coding RNA*. 2024. IF=**3.6**

- Srivastava, DK, …, **Das, S**., and **Rai, SN.** Estimating Disease Specific Incidence Rates in Childhood Cancer. *Proceeding of 26th Conference of SSCA*. 2024.

Selected Publications

Population Studies

- Petery T, …, **Wu X**, **Rai SN**, Takiar V. …treatment package time on locally advanced oral cavity cancer…. *Oral Oncol*. 2024. IF=**4.0**

- Whitrock J, **Pan J**, **Rai S**, ….Van Haren RM. … Environmental Exposures on Survival After Non-Small Cell Lung Cancer Resection. *Ann Thorac Surg Short Reports*. 2024. IF=**3.8**

- Chaudhary D, …, **Pinkston C**. Abell, Thomas L. … Autoimmune Markers … in Patients with Symptoms of Gastroparesis. *Journal of Clinical Gastroenterology.* 2024. IF=**2.8**

- Moore AN, …, **Pinkston C**, **Rai S**, …, Van Haren RM. … smoking status impact post-operative complications following lung cancer resection? (Submitted)

We provide analysis from raw files for…



- bulk-RNA sequencing data
- proteomics data
- downstream pathway analysis
- 3D chromosomal folding (HiC) data
- DNA-sequencing data

Public Health Bioinformatics and Biostatistics

- single-cell RNA-sequencing data
- survival data analysis
- sample size, power calculation for clinical trials and other studies.

We also provide analysis for …

Population Studies



Key areas of focus:

- Descriptive Statistics
- Health Disparities
- Risk Factors
- Social Determinants of Health
- Intervention Evaluations
- Environmental Health



Dr Susan Pinney



Dr Alique Topalian

Important Considerations:

- Data Quality
- Statistical Methods (parametric vs. non-parametric)

We also provide analysis for …

Data Science



- Image/Texture Data

assess the correlation between
texture features and histologic and
biochemical markers of response to treatment
& disease-free survival in patients



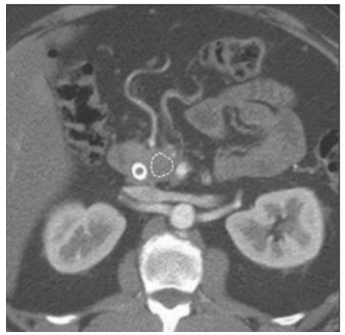
Dr Davendra Sohal

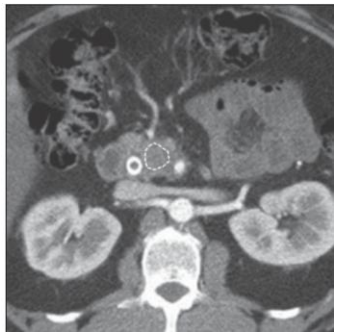


Dr Gregory Wilson

- Machine Learning Techniques for Big Data

- Clustering
- Classification
- Networks





Source: Borhani et al., 2019
Gastrointestinal Imaging

Some Public Repository data sources we work with…

Apart from Internal/External Collaboration data, we expertise in analyzing Public Repository Data

Public Health, Bioinformatics and Biostatistics

TCGA

dbGaP

CPTAC

Population Studies

National Cancer Database (NCDB)

Health Information National Trends Survey (HINTS-SEER)

Fernald Community Cohort (FCC)

National Lung Screening Trial (NLST)

UCCC Cancer Registry

Data Science

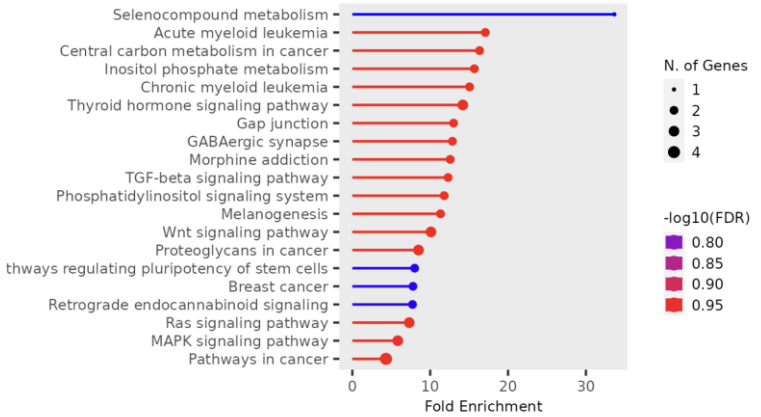
SEER

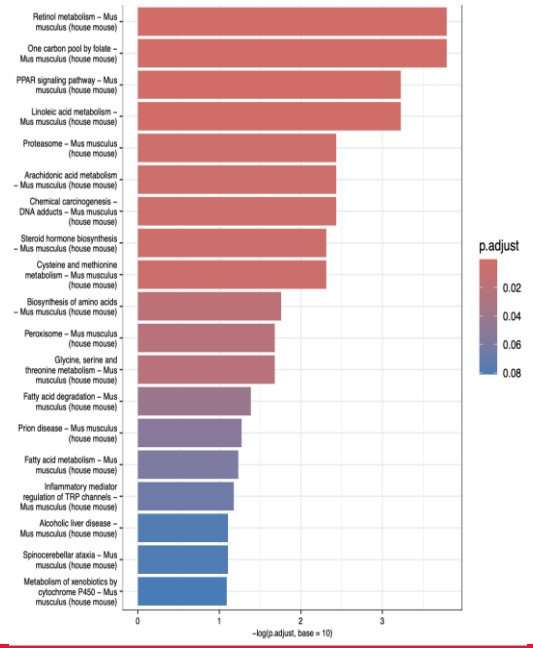
TriNetX

King Abdulaziz University Mammogram

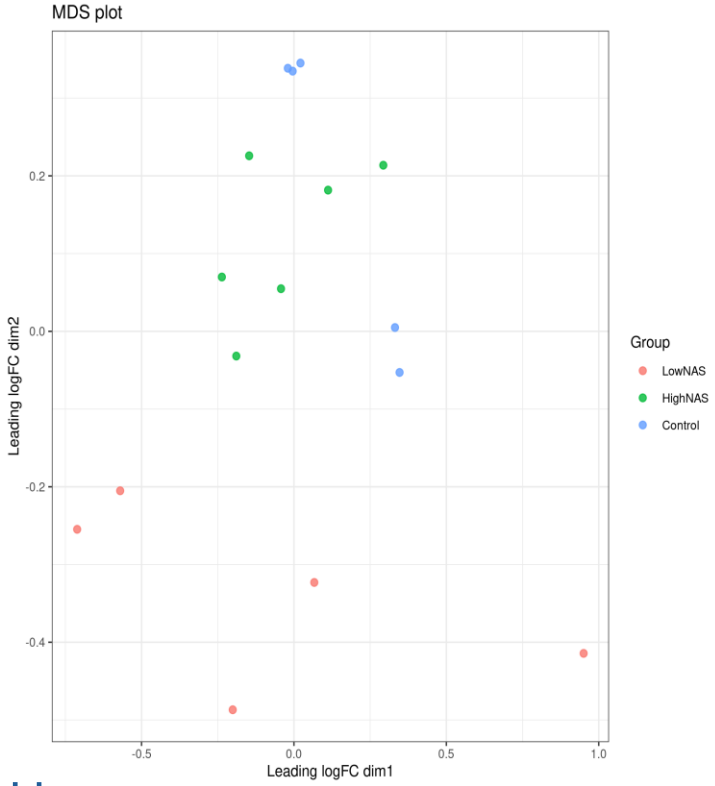
Deliverables

Pathway Analysis

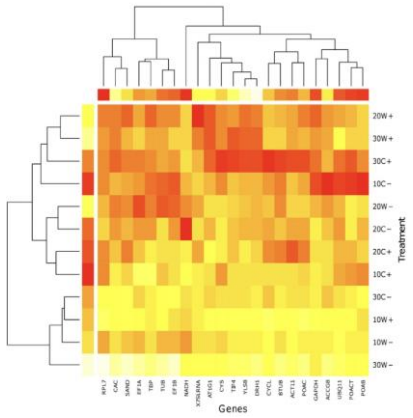




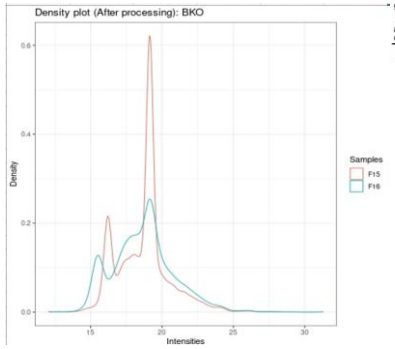
MDS Plot



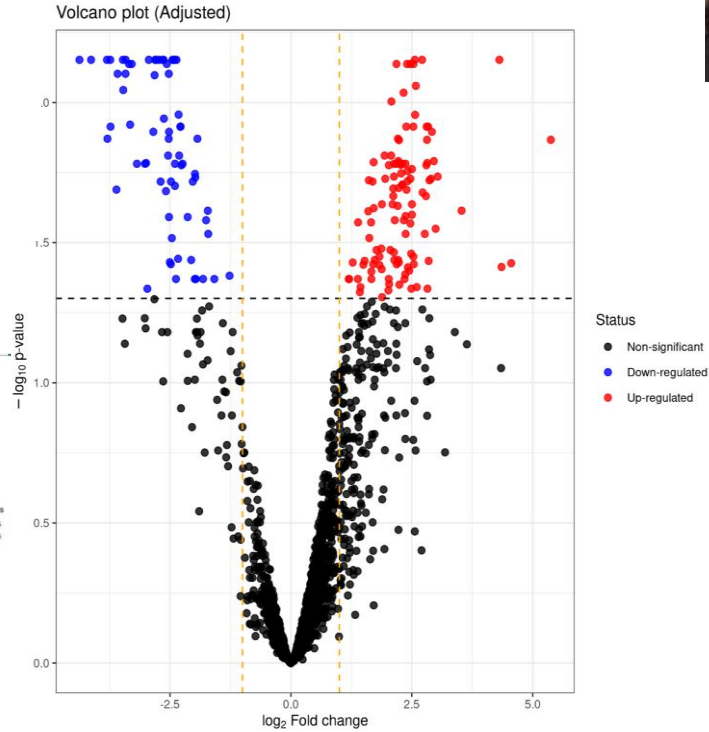
Heatmap

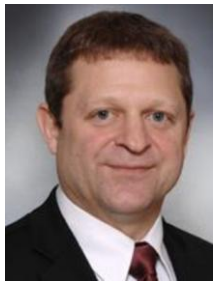


Density Plot



Volcano Plot





Dr Andrew Waters



Dr. Ken Greis



Dr Mathieu Sertorio



Dr Chunying Du



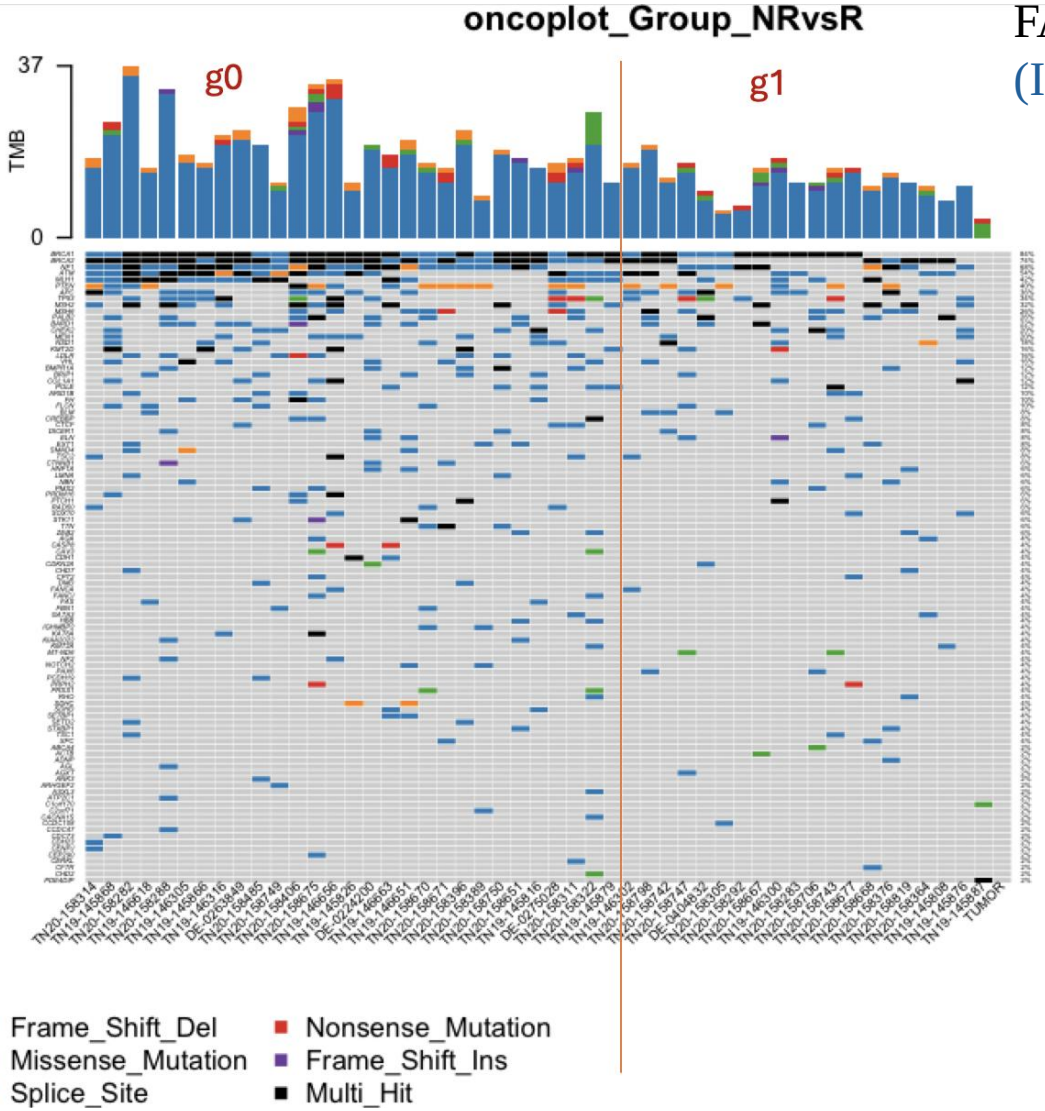
Dr Erin Hertlein



Dr John Byrd

Deliverables

Oncoplot



Bioinformatics pipeline analysis:

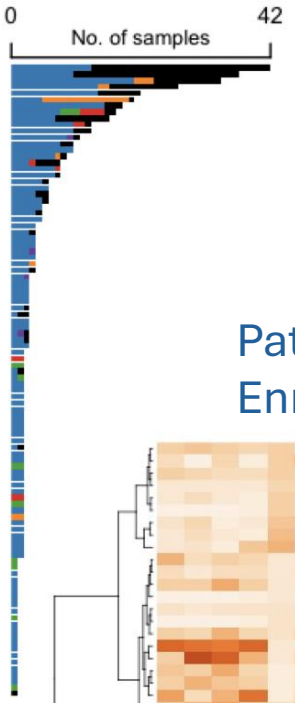
Convert Fastq files to Mutation Annotation Format (MAF)

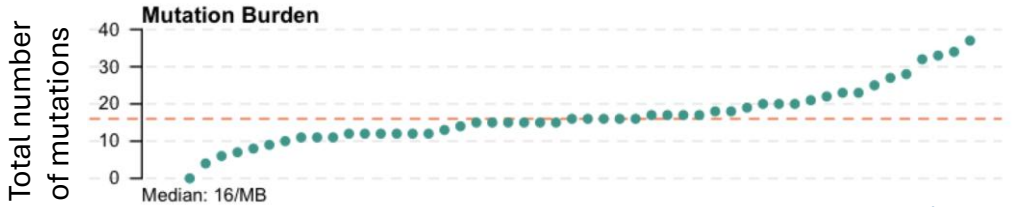
FASTQ>SAM>BAM>VCF>MAF

(Identify Missense, Nonsense, Ins/Del etc. Mutations)

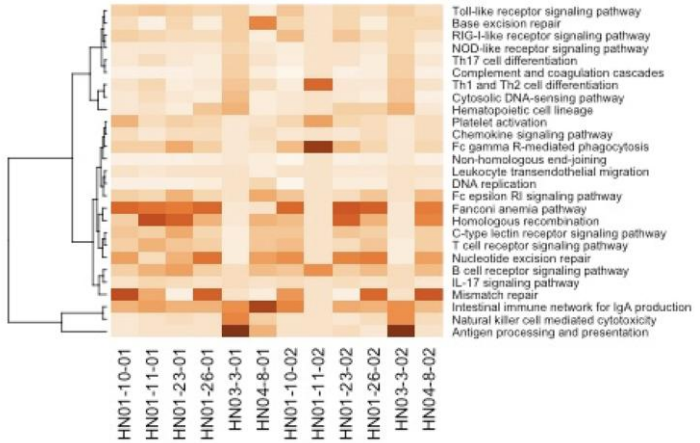


Dr Trisha Wise-Draper





Patient-specific Enriched Pathways

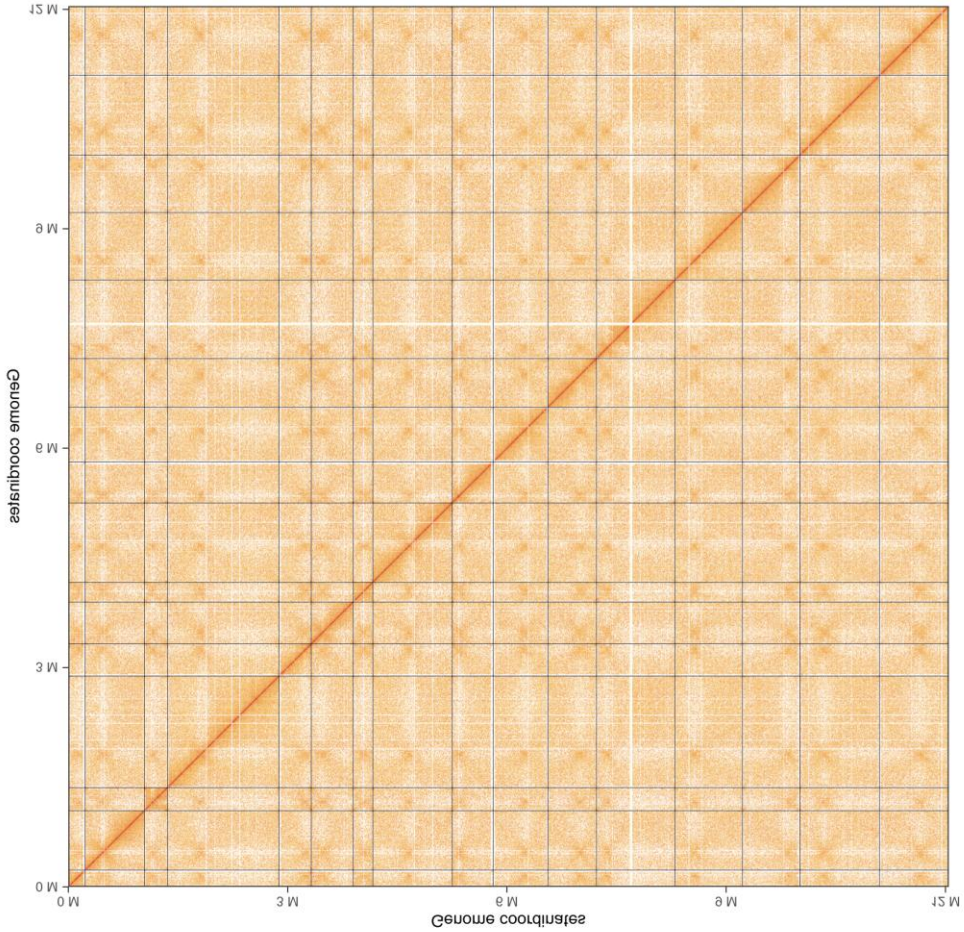


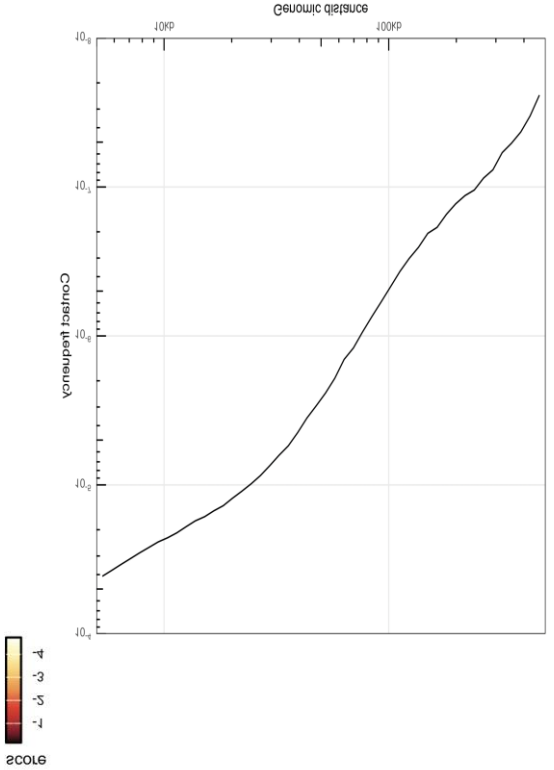
Mutations per Gene in different Groups

```
# A tibble: 195 × 3
   Gene    G0    G1
   <chr>   <chr> <chr>
 1 APC     12    9
 2 ARID1B  3     2
 3 ATM     25    20
 4 BARD1   10    2
 5 BMPR1A  5     2
 6 BRCA1   62    39
 7 BRCA2   65    34
 8 BRIP1   5     1
 9 CDH1    1     2
10 CHD7    1     1
# ℹ 185 more rows
```

Deliverables

Contact Matrix from 3D chromosomal folding (HiC) data





Single-cell analysis





Dr Erin Hertlein

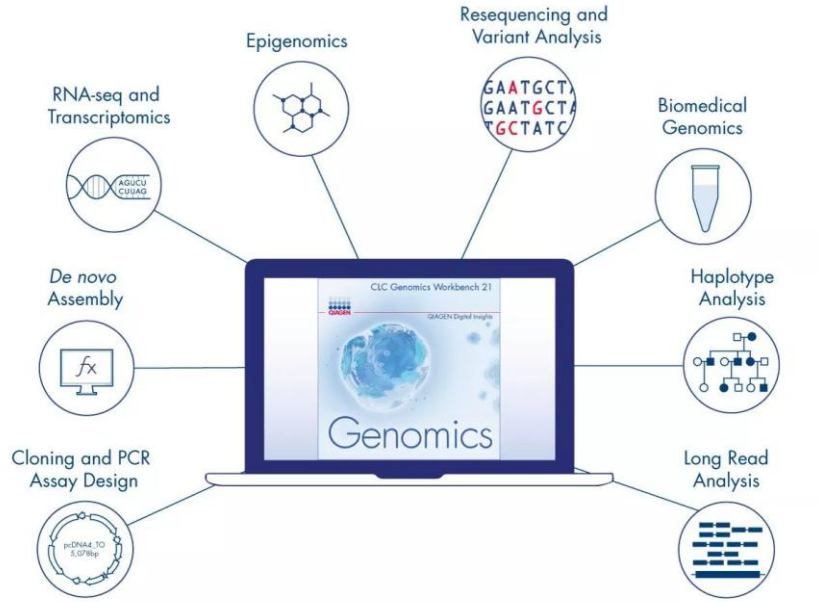


Dr John Byrd

	seqnames1	start1	end1	width1	strand1	seqnames2	start2	end2	width2	strand2	frag1	frag2	distance
2	I	35	35	1	+	I	11622	11622	1	+	0	41	11587
3	I	45	45	1	-	XI	666606	666606	1	-	0	45073	NA
4	I	46	46	1	+	XIV	187903	187903	1	-	0	58641	NA
5	I	48	48	1	-	IX	426219	426219	1	+	0	20698	NA
6	I	54	54	1	-	XI	622895	622895	1	+	0	44786	NA
7	I	55	55	1	-	X	268836	268836	1	+	0	37917	NA
8	I	56	56	1	+	I	970	970	1	+	0	3	914
9	I	56	56	1	-	XV	83	83	1	+	0	62362	NA
10	I	56	56	1	+	XVI	605978	605978	1	-	0	72739	NA
11	I	57	57	1	-	I	42490	42490	1	-	0	191	42433

Biostatistics and Informatics Shared Resource (BISR)

Analysis Software



QIAGEN
INGENUITY
PATHWAY ANALYSIS

Synergy: working together

BISR and CDSC

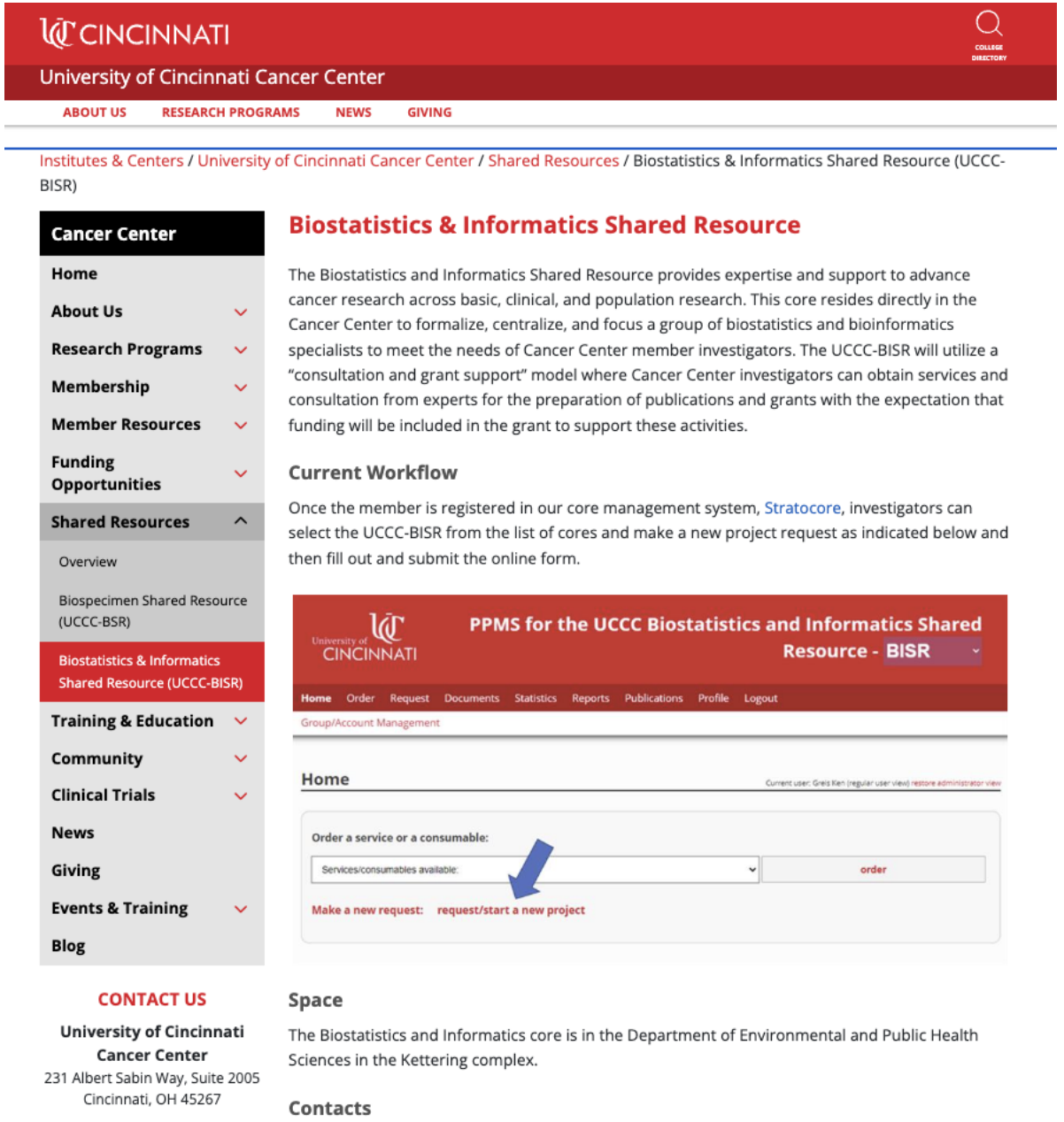
(Biostatistics and Informatics Shared Resource; Cancer Data Science Center)

- CHI
- COE
- Biorepository
- Wet labs (e.g., Proteomics, Metabolomics, Transcriptomics)

Contact us!

Initiate a new project request: PPMS for the BISR Facility: https://ppms.us/uc/login/?pf=18
or Scan the code



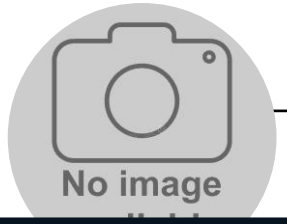


Email: Shesh.Rai@uc.edu

Biostatistics and Informatics Shared Resource (BISR) - Organizational Structure



Shesh Rai
Director



TBD
Bioinformatics Advisor



Anand Seth
Research Manager

Faculty



TBD
Biostatistics



TBD
Bioinformatics



TBD
Health Analytics/ Data Science

Research Scientists



Jianmin Pan



Xiaoyong Wu



Sarmistha Das



TBD

PhD Students



Wedad Alatebi



Bipul Das



MMR Manik

Research Associates



Christy Pinkston



Jayesh Rai



TBD



TBD

Survey

Thank you!!

RESEARCH RESOURCES *for* Human Population Studies

University of CINCINNATI CANCER CENTER™

University of Cincinnati • UC Health • Cincinnati Children's

Thursday, December 12, 2024 | 9:00 a.m. – 12:00 p.m.