

# DCB and NCI Resources for Researchers

Lillian Kuo, Ph.D

Cancer Immunology, Hematology, and Etiology Branch

Division of Cancer Biology

**DCB Annual New Grantee Workshop**

**January 11, 2023**

The **objective** is to raise awareness of the breadth of DCB and NCI resources available to all researchers by providing brief descriptions of these resources with reference links.

# DCB and NCI Resources for Researchers

## Experimental Resources



# DCB and NCI Resources for Researchers

## Experimental Resources



Animal Models, Cell Lines,  
Reagents, Instrumentation, etc.

# NCI Mouse Repository

## Mouse Cancer Models

- Mice are cryopreserved
- Request frozen embryos or sperm
- Researchers are encouraged to submit their cancer models to the NCI Mouse Repository for archiving and distribution

## miRNA Embryonic Stem Cell Collection

- ES cells overexpressing microRNA
- MicroRNAs are GFP labeled
- microRNA expression is inducible

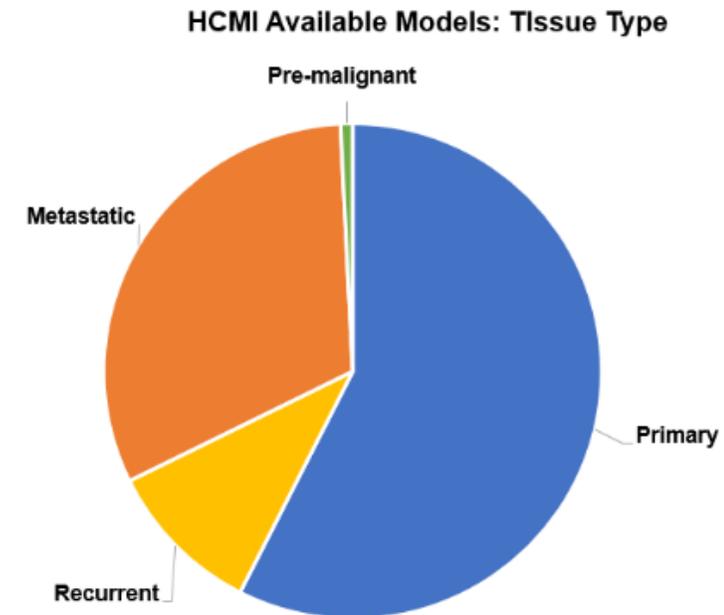
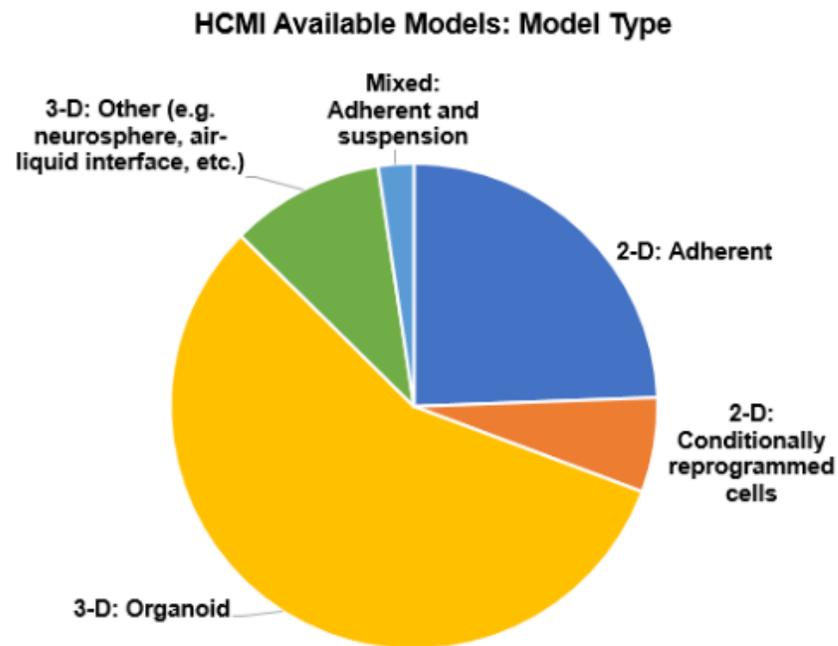
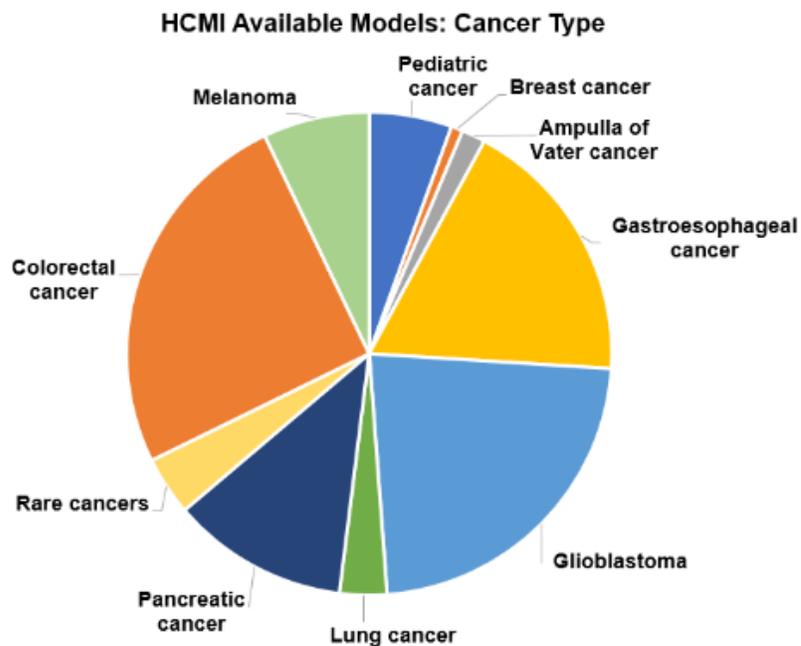


<https://frederick.cancer.gov/resources/repositories/nci-mouse-repository>

[MouseRepository@mail.nih.gov](mailto:MouseRepository@mail.nih.gov)

# HCMI: Human Cancer Models Initiative

HCMI models and their case-associated data are available to researchers as a community resource.



<https://hcmi-searchable-catalog.nci.nih.gov/>

# Developmental Therapeutics Program (DTP)

- **Repository of Chemical Agents**

Small Molecules and Isolated Natural Products: More than 200,000 synthetic compounds and pure natural products for non-clinical research purposes

- **Repository of Natural Products**

170,000 extracts from samples of more than 70,000 plants and 10,000 marine organisms collected from more than 25 countries, more than 30,000 extracts of diverse bacteria and fungi

- **Repository of Biologicals** - Monoclonal Antibodies, Cytokines and Cytokine Standards

- **Repository of Tumors and Tumor Cell Lines** (e.g., NCI-60): Transplantable in vivo-derived tumors and in vitro-established tumor cell lines from various species

- **Repository of Patient-Derived Models**



<https://dtp.cancer.gov/repositories/default.htm>

[ncidtpinfo@mail.nih.gov](mailto:ncidtpinfo@mail.nih.gov)

# NIH Tetramer Core

## Why a tetramer core?

- To produce and distribute to the research community of major histocompatibility complex (MHC) tetramers and related reagents for the detection of T cell responses to viruses, bacteria, parasites, **tumors**, auto-antigens, and other model antigens.
- To encourage research to identify antigen-specific T cells by flow cytometry, even those present at low frequencies in fresh populations of lymphocytes sampled directly ex vivo
- Reagents are provided to qualified investigators at no cost, except for shipping and handling fees and in cases where the investigator is asked to provide the TCF with peptide or other appropriate ligands.

## Reagents:

- CD1d Ligands
- MR1 Tetramers
- Non-MHC Tetramers
- Fluorophores and other labels
- Novel alleles

<https://tetramer.yerkes.emory.edu/>

# BEI Resource Repository

- The BEI Resources Repository is a central repository that supplies organisms and reagents to the broad community of microbiology and infectious diseases researchers.
- There is no charge for research materials, but domestic investigators will be required to pay for shipping costs.



<https://www.beiresources.org/Catalog.aspx>

[contact@beiresources.org](mailto:contact@beiresources.org)

# Biopharmaceutical Development Program

- Biopharmaceutical Development Program offers resources for and expertise in the development of investigational biological products that move promising treatments for cancer, rare diseases, AIDS, and infectious diseases into clinical trials.
- Provides analytical technologies for antibodies, recombinant proteins, peptide, DNA, and viral vaccines, oncolytic viruses, gene therapy products, cell therapies, and other biological and immunomodulating agents.
- Opportunities for collaboration are reviewed and approved by the National Cancer Institute using cooperative agreements.

<https://frederick.cancer.gov/research/biopharmaceutical-development-program>  
[yovandij@mail.nih.gov](mailto:yovandij@mail.nih.gov)

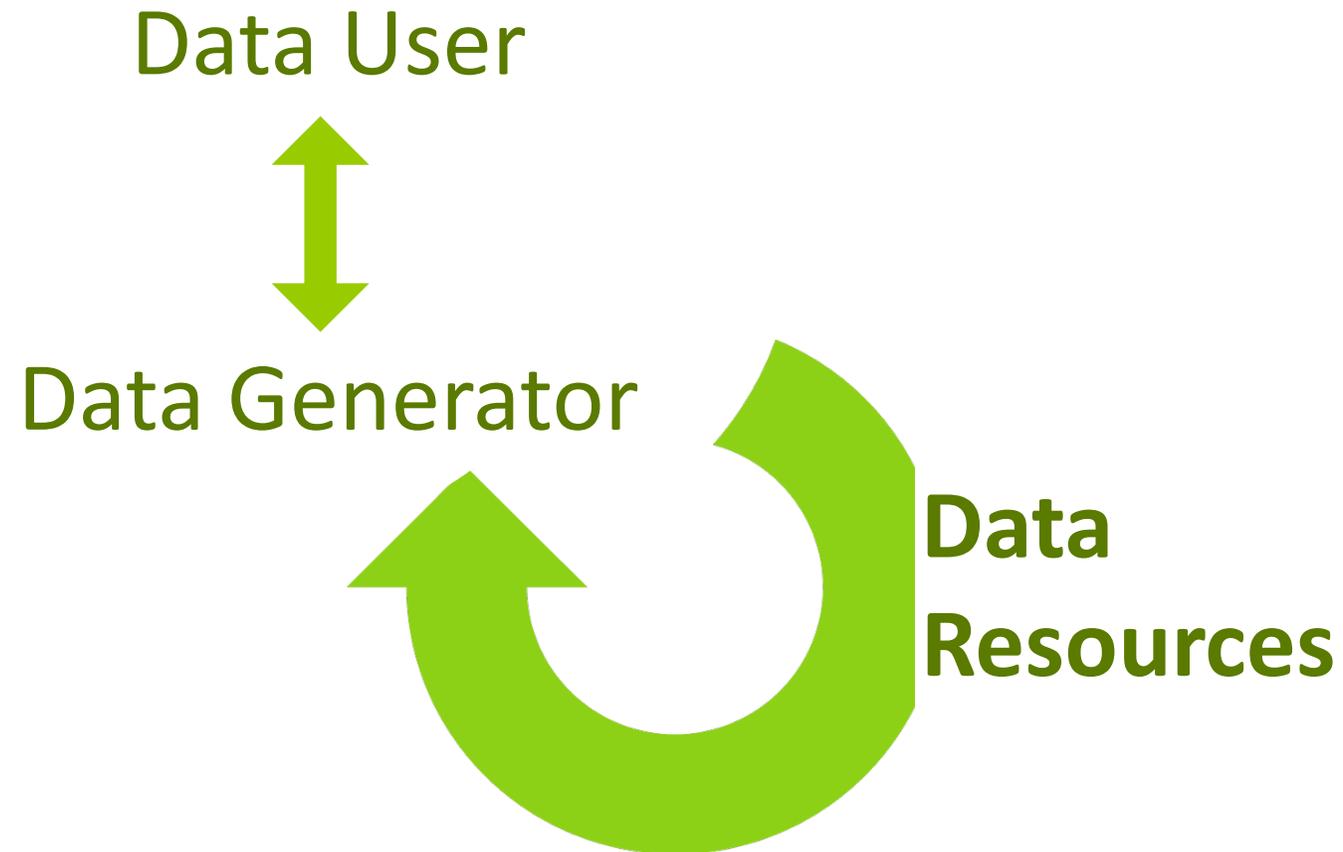
# National Cryo-Electron Microscopy Facility

- Facility to provide cryo-EM images collected on state-of-the-art instruments to extramural academic users who can show that they have specimens of the required quality ready for imaging at high resolution
- Titan Krios microscope facility, where users can apply for a 48-hour imaging session of up to two different samples that will be loaded at one time together for each session.



<https://www.cancer.gov/research/resources/cryoem/access>

# DCB and NCI Resources for Researchers



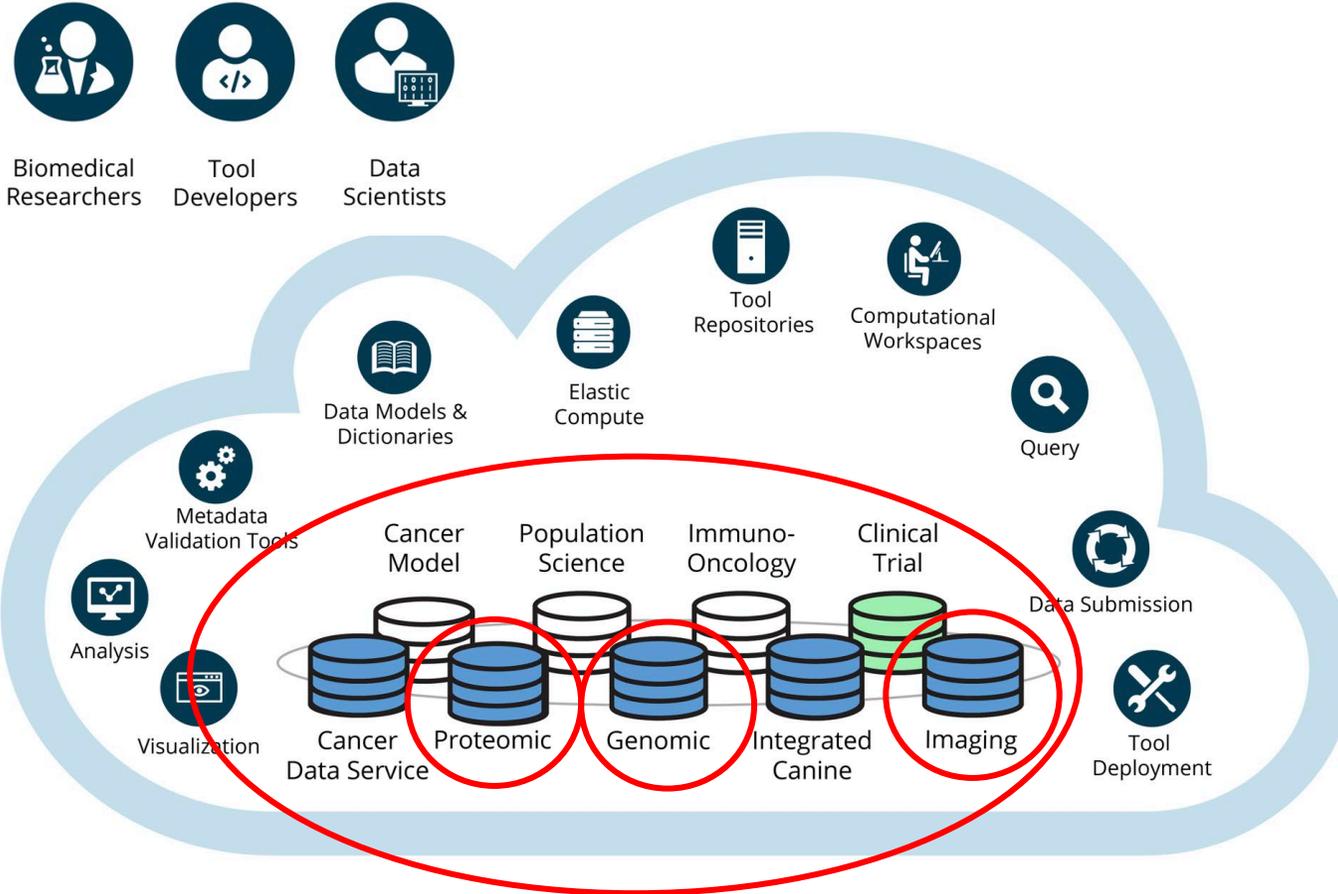
# Surveillance, Epidemiology, and End Results Program (SEER)

- Provides information on cancer statistics in an effort to reduce the cancer burden among the U.S. population.
- Cancer data from registries covering 35% of the U.S. population
- SEER is managed by the Surveillance Research Program (SRP) in the Division of Cancer Control and Population Science (DCCPS), NCI
- Data includes cancer incidence and population data associated by age, sex, race, year of diagnosis, and geographic areas
- Releases new research data every spring based on the previous November's submission of data

<https://seer.cancer.gov>

# Cancer Research Data Commons (CRDC)

## Data Contributors & Consumers



<https://datacommons.cancer.gov>

- Data are stored in domain- or program-specific repositories, called **Data Repositories**.
  - Genomic Data Commons (includes **TCGA** Data) <https://portal.gdc.cancer.gov>
  - Proteomic Data Commons (includes **CPTAC** Data) <https://pdc.cancer.gov/pdc>
  - Imaging Data Commons (includes **TCIA** Data) <https://portal.imaging.datacommons.cancer.gov>
- **NCI Cloud Resources** provide compute capability for the users of CRDC data (hosted by The Broad Institute, Institute for Systems Biology, and Seven Bridges)
- Researchers can combine their own data and tools with CRDC data for integrative analysis

# Cancer Moonshot Data Resources

1-800-4-CANCER Live Chat Publications Dictionary

ABOUT CANCER CANCER TYPES RESEARCH GRANTS & TRAINING NEWS & EVENTS ABOUT NCI search

Home > Research > Key Initiatives > Cancer Moonshot™

## CANCER MOONSHOT™

- Blue Ribbon Panel
- Research Initiatives**
- Direct Patient Engagement Network
- Adult Immunotherapy Network
- Pediatric Immunotherapy Network
- Drug Resistance Network
- National Cancer Data Ecosystem
- Drivers of Childhood Cancers
- Symptom Management
- Hereditary Cancers
- Prevention & Early Detection Strategies
- Retrospective Analysis of Biospecimens
- Human Tumor Atlas Network
- New Enabling Cancer Technologies

Seminar Series

Funding Opportunities

### Cancer Moonshot™ Research Initiatives

Following receipt of the [Blue Ribbon Panel \(BRP\) report](#), and the authorization of the 21st Century Cures Act, the NCI established implementation teams that align with each of the BRP recommendations. The teams have identified opportunities and developed initiatives for funding that directly address each of the recommendations. These mark the beginning of a Cancer Moonshot portfolio that will continue to be expanded in future years.

The following initiatives have been established to address the goals of the recommendations:

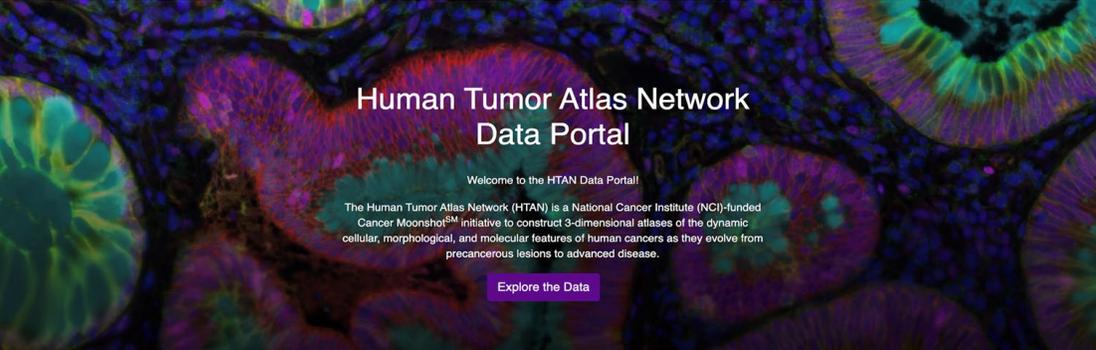
- Establish a Network for Direct Patient Engagement**  
Engage patients to contribute their comprehensive tumor profile data to expand knowledge about what therapies work, in whom, and in which types of cancer.
- Create an Adult Immunotherapy Network**  
Establish a cancer immunotherapy research network to develop immune-based approaches for the treatment and prevention of cancer in adult patients.
- Create a Pediatric Immunotherapy Discovery and Development Network (PI-DDN)**  
Generate a cancer immunotherapy research network to overcome challenges in the development of immunotherapies for childhood cancers.
- Develop Ways to Overcome Cancer's Resistance to Therapy**  
Identify therapeutic targets to overcome drug resistance through studies that determine the mechanisms that lead cancer cells to become resistant to previously effective treatments.
- Build a National Cancer Data Ecosystem**  
Create a national ecosystem for sharing and analyzing cancer data so that researchers, clinicians and patients will be able to contribute data, which will facilitate efficient data analysis.
- Intensify Research on the Major Drivers of Childhood Cancers**  
Improve our understanding of fusion oncoproteins in pediatric cancer and use new preclinical models to develop inhibitors that target them.
- Minimize Cancer Treatment's Debilitating Side Effects**  
Accelerate the development of guidelines for routine monitoring and management of patient reported symptoms to minimize debilitating side effects of cancer and its treatment.
- Prevention and Early Detection of Hereditary Cancers**  
Improve current methods and develop new strategies for the prevention and early detection of cancer in individuals at high risk for cancer.
- Expand Use of Proven Cancer Prevention and Early Detection Strategies**  
Reduce cancer risk and cancer health disparities through the development, implementation, and broad adoption of proven cancer prevention and detection approaches.
- Retrospective Analysis of Patient Data and Biospecimens from Past Clinical Trials to Predict Future Patient Outcomes**  
Predict response to standard treatments through retrospective analysis of patient specimens.
- Generation of Human Tumor Atlases**  
Create dynamic 3D maps of human tumor evolution to document the genetic lesions and cellular interactions of each tumor as it evolves from a precancerous lesion to advanced cancer.
- Develop New Enabling Cancer Technologies**  
Develop new enabling cancer technologies to characterize tumors and test therapies.



## Immuno-Oncology Translational Network (IOTN)

# IOTN Data Sharing Catalog

HTAN EXPLORE DATA STANDARDS DATA TRANSFER ANALYSIS TOOLS HTAN MAIN SITE



## Human Tumor Atlas Network Data Portal

Welcome to the HTAN Data Portal!

The Human Tumor Atlas Network (HTAN) is a National Cancer Institute (NCI)-funded Cancer Moonshot™ initiative to construct 3-dimensional atlases of the dynamic cellular, morphological, and molecular features of human cancers as they evolve from precancerous lesions to advanced disease.

[Explore the Data](#)

<https://www.cancer.gov/research/key-initiatives/moonshot-cancer-initiative>

<https://www.iotnmoonshot.org/en/resources/data-sharing-catalog/>

# NCI Data Resources

## CTD<sup>2</sup> Data Portal



### The Broad Institute

Columbia University

Dana-Farber Cancer Institute

Emory University

Fred Hutchinson Cancer Research Center – 1

Fred Hutchinson Cancer Research Center – 2

Johns Hopkins University

Oregon Health and Science University – 1

Oregon Health and Science University – 2

Stanford University

Translational Genomics Research Institute (complete)

University of California San Diego

University of California San Francisco – 1

University of California San Francisco – 2

University of Texas MD Anderson Cancer Center (complete)

University of Texas Southwestern Medical Center (complete)

4 Datasets  
7 Datasets  
13 Datasets  
6 Datasets  
6 Datasets  
3 Datasets  
2 Datasets  
1 Datasets  
0 Datasets  
5 Datasets  
3 Datasets  
0 Datasets  
3 Datasets  
4 Datasets  
4 Datasets  
8 Datasets

<https://ocg.cancer.gov/programs/ctd2/data-portal>

## Cancer Systems Biology Consortium (CSBC)

<https://csbconsortium.org>

## Physical Sciences - Oncology Network (PS-ON)

<https://physics.cancer.gov>



Cancer Complexity Knowledge Portal

<https://www.cancercomplexity.synapse.org/>

# Data Analysis Tools

## Informatics Technology for Cancer Research

<https://itcr.cancer.gov>



[Home](#) | [Contact Us](#) | [Download ITCR Fact Sheet](#)

Search...

SEARCH

Supporting Informatics Needs Across the Cancer Research Continuum

### INTRODUCTORY VIDEOS

ITCR supports a wide range of informatics tools to serve current and emerging needs across the cancer research continuum.

Short introductory videos for many of the ITCR Tools are available below.

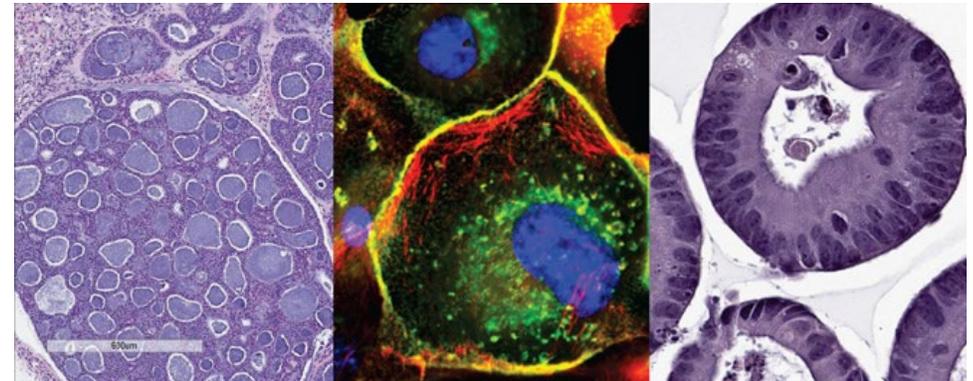


# NCI Resources for Researchers



# Patient-derived Models Repository (PDMR)

- A national repository of Patient-Derived Models (PDMs) comprised of patient-derived xenografts (PDXs), in vitro patient-derived tumor cell cultures (PDCs) and cancer associated fibroblasts (CAFs) as well as patient-derived organoids (PDOrg).
- Generated from primary and metastatic tumor tissues and blood specimens supplied by NCI-supported clinical trials, research programs and Cancer Centers
  - Patient-derived xenografts
  - Patient-derived tumor cell cultures
  - Cancer associated fibroblasts
  - Patient-derived organoids



<https://pdmr.cancer.gov>

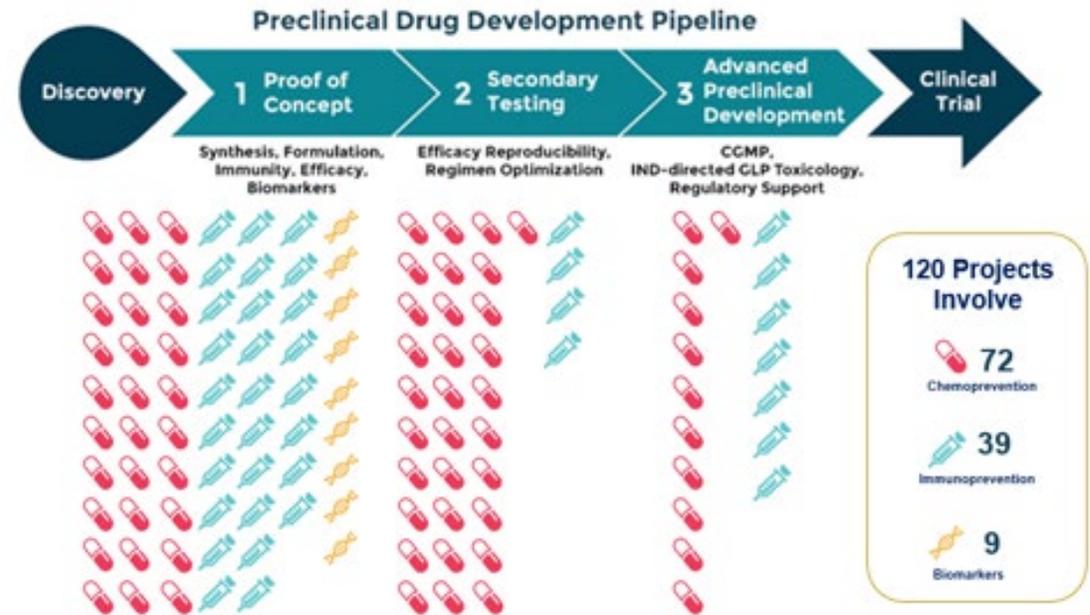
[NCI PDM Repository@mail.nih.gov](mailto:NCI_PDM_Repository@mail.nih.gov)

# PREVENT Cancer Preclinical Drug Development Program (PREVENT)

NATIONAL CANCER INSTITUTE

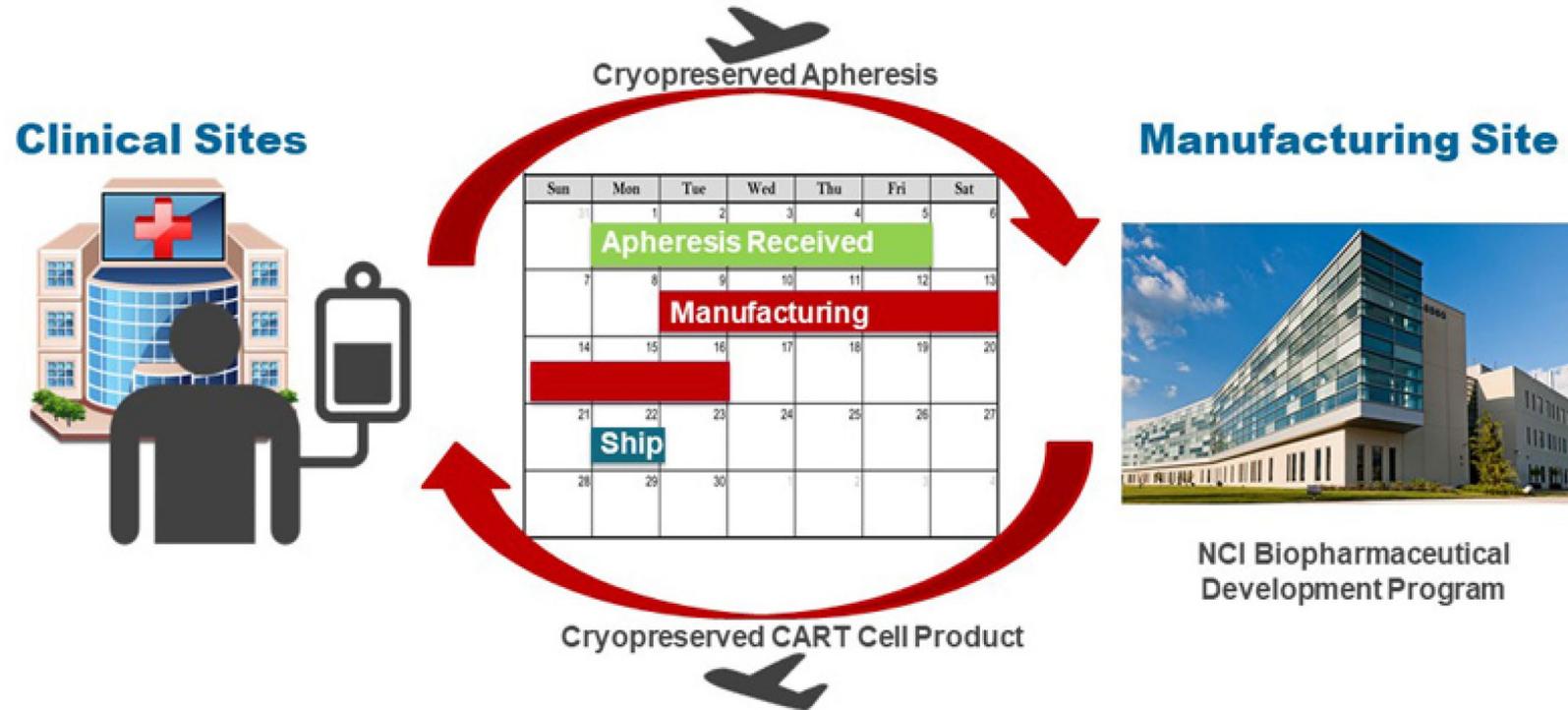
PREVENT Cancer Preclinical Drug Development Program (PREVENT) supports the best ideas in cancer prevention using NCI contract resources

The 120 projects in PREVENT involve



<https://prevention.cancer.gov/node/2976>

# NCI Experimental Therapeutics (NExT)



NCI Manufacturing for multi-center CAR-T cell trials at the Frederick National Lab for Cancer Research (FNLCR)

<https://next.cancer.gov>

# Annotated Biospecimens

## National Clinical Trials Network Navigator (NCTN Navigator)

- For cancer researchers interested in conducting studies using **specimens and clinical data collected from cancer treatment trials** (239 trials, 150 K patients, 2 M Specimen)
- Specimens are donated by patients in NCI-sponsored, completed Phase III trials and include **tumor tissue, nucleic acids, blood, bone marrow,...**

<https://navigator.ctsu.org/navigator/login>

### Navigator Process Flow



# DCB and NCI Resources for Researchers

## Experimental Resources



<https://www.cancer.gov/research/resources>

<https://www.cancer.gov/about-nci/organization/dcb/researcher-resources>