



RESEARCH RESOURCES

AT THE FREDERICK NATIONAL LABORATORY

The Frederick National Laboratory is meeting the nation's most urgent biomedical research needs and serves as a national and global resource for the scientific community.

Most resources listed below are available for cancer researchers freely or at nominal costs.

Specimen Repositories

Patient-Derived Models Repository

- Patient-derived xenografts, in vitro patient-derived tumor cell cultures, cancer associated fibroblasts, & patient-derived organoids

NCI Mouse Repository

- 150 genetically engineered cancer models
- 1,500 genetically engineered mouse embryonic stem cell lines harboring conditional microRNA transgenes

NCI Natural Products Repository

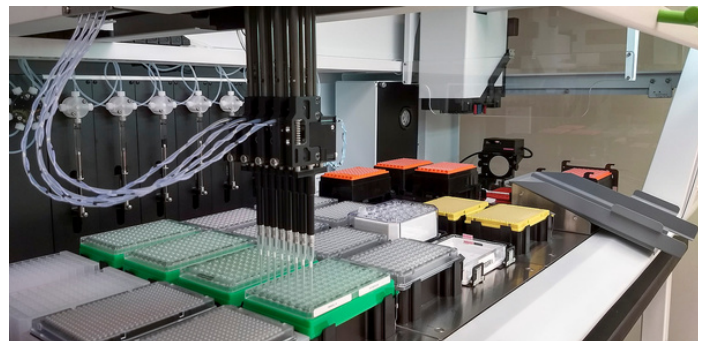
- 80,000 plant samples
- 20,000 marine invertebrates and marine algae samples
- 16,000 microbes samples

NCI Program for Natural Product Discovery Prefractionated Library

- 500,000 natural product fractions

Tumor Repository

- In vitro cell lines, transplantable animal and human tumors, canine specimens, and yeast



Reference Materials and Operating Procedures

Human SARS-CoV-2 Serology Standard

- Human SARS-CoV-2 evaluation panel and serology standard (calibrated to the WHO International Standard)

HPV Serology Reference Standard

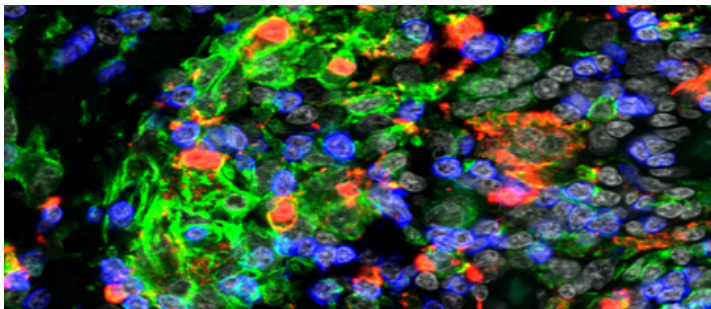
- HPV serology reference standard, proficiency panel, and an array of HPV operating procedures

Good Manufacturing Practices (GMP) Training and Standard Operating Procedures

- GMP documents covering cell therapy, development operations, quality control, production, regulatory affairs, and more

Scientific Standards Hub

- Standards and references to increase the reproducibility of data in the areas of AI and data science, antibody science, biospecimen assays, electron microscopy, nanotechnology, protein science, and serology



RESEARCH RESOURCES

AT THE FREDERICK NATIONAL LABORATORY



Data Repositories and Computational Tools

Cancer Research Data Commons

- Cloud-based data infrastructure that connects data sets with analytics tools to allow users to share, integrate, analyze, and visualize cancer research data to drive scientific discovery:
 - **Genomic Data Commons**
 - **Proteomic Data Commons**
 - **Integrated Canine Data Commons**
 - **Imaging Data Commons**
 - **Cancer Data Service**
 - **NCI Cloud Resources**

Clinical Trials Reporting Program

- Comprehensive database on all interventional NCI-funded clinical trials

Biological DataBase Network

- Network of the major biological databases, including Gene, UniProt, Ensembl, GO, Affy, and RefSeq

Annotation, Visualization, and Impact Analysis

- Application that guides, prioritizes, and summarizes genomic variants

NCI-Department of Energy (DOE) Collaboration AI/ML Resource

- Cutting-edge computational models, algorithms, data sets, software, and other resources, including the following:
 - **Predictive Oncology Model and Data Clearinghouse (MoDaC)** – public-facing repository to enable sharing of NCI-DOE Collaboration data sets
 - **CANcer Distributed Learning Environment (CANDLE)** – software that improves machine/deep learning models by performing hyperparameter optimization
 - **ATOM Modeling PipeLine (AMPL)** – open source, modular, extensible software pipeline for building and sharing models to advance in silico drug discovery
 - **Innovative Methodologies and New Data for Predictive Oncology Model Evaluation (IMPROVE)** – AI and machine learning (ML) resources for comparing and evaluating deep learning drug response prediction models
 - **AI-Driven Multiscale Investigation of the RAS/RAF Activation Lifecycle (ADMIRRAL)** – AI/ML resources supporting the development of predictive molecular-scale understanding of RAS-RAF activation
 - **Modeling Outcomes Using Surveillance Data and Scalable AI for Cancer (MOSSAIC)** – AI/ML resources NCI's Surveillance, Epidemiology, and End Results (SEER)

Services

Cancer Nanomedicine Characterization Program

- Characterization of oncology nanoparticles' physical and chemical attributes, their in vitro biological properties, and their in vivo compatibility using animal models

Technical Service Program

- At-cost access to unique HIV/AIDS, nanomedicine, and laboratory animal services

National Cryo-Electron Microscopy Facility

- High-resolution cryo-EM imaging services

Antibody Development

- Affinity reagent production and characterization for cancer-related targets

Antibody Portal

- Standardized renewable affinity reagents to cancer-associated targets and accompanying characterization data
- 943 monoclonal antibodies to 547 antigen targets

Imaging Mass Cytometry Laboratory

- High-dimensional proteomics analysis of tumor samples

NCI Experimental Therapeutics Program (NEXT)

- Resources for projects focused on developing therapies for unmet medical needs in oncology

RAS Tools and Resources

- Unique reagents, assays, and tools to support RAS research

