Office of Cancer Genomics

The Office of Cancer Genomics (OCG), within the Center for Cancer Genomics, aims to advance the molecular understanding of cancers with the goal to improve patient outcomes. OCG supports large-scale cancer genomic and translational research programs that accelerate discoveries into the clinic, thereby contributing to precision oncology. All OCG programs share data and resources with the research community. OCG initiatives promote:

- Generation and dissemination of up-to-date data via programmatic databases and the Genomic Data Commons
- Advances in bio- and chemi-informatic methodologies
- Creation of valuable experimental reagents, resources, and models

OCG Programs

CGCI - Cancer Genome Characterization Initiative

CGCI supports research to comprehensively catalog the genomic alterations in rare adult and pediatric cancers. The HIV+ Tumor Molecular Characterization Project (HTMCP) and the Burkitt Lymphoma Genome Sequencing Project (BLGSP) use genomic, epigenomic, and transcriptomic sequencing to uncover distinct features of HIV-associated cancers. The HIV-associated cancers studied under this initiative are diffuse large B-cell lymphoma, lung carcinoma, cervical carcinoma, and non-Hodgkin lymphoma. *https://ocg.cancer.gov/programs/cgci*

- Standard Operating Procedures (SOPs) and templates for submitting samples to large-scale genome characterization initiatives can be accessed at *https://ocg.cancer.gov/programs/cgci/resources*

CTD² - Cancer Target Discovery and Development Network

The CTD² Network bridges the knowledge gap between cancer genomics and precision oncology for the development of effective chemical and/or biological (immunotherapeutic) combinatorial cancer therapies to minimize treatment resistance. The CTD² Network emphasizes collaborations between its Centers which have complementary and distinctive expertise in various computational and functional genomic approaches. Data, analytical tools, and reagents developed by CTD² Network Centers are available to the research community through the website. *https://ocg.cancer.gov/programs/ctd2*

HCMI - Human Cancer Models Initiative

The HCMI is an international consortium created by the National Cancer Institute (NCI), Cancer Research UK, the foundation Hubrecht Organoid Technology, and the Wellcome Sanger Institute. The NCI has funded two Cancer Model Development Centers (CMDCs) to contribute models to the HCMI: (1) the Broad Institute CMDC and (2) the Cold Spring Harbor Laboratory CMDC. The HCMI members are generating novel human tumor-derived models to more closely mirror the architecture and cellular heterogeneity of human tumors. A subset of HCMI-developed models along with patient-associated clinical and molecular data will be available by the end of the year to researchers as a community resource in an effort to advance biomedical research. *https://ocg.cancer.gov/programs/HCMI*

TARGET - Therapeutically Applicable Research to Generate Effective Treatments

TARGET is a comprehensive molecular characterization initiative that utilizes state-of-the-art genomics tools to identify molecular changes that drive childhood cancers, including hematologic and solid tumors. TARGET is organized into a collaborative network of disease-specific project teams that identify and confirm alterations, within and across various childhood cancers, to improve treatment strategies and advance the understanding of the biology of these malignancies. *https://ocg.cancer.gov/programs/target*

OCG Data Access

OCG shares data generated through its collaborative programs with the research community in accordance with NIH policies. Data is available in open- and controlled-access tiers. The controlled-access protects the privacy and confidentiality of the patients and requires authorization, through NCBI's database for Genotypes and Phenotypes (dbGAP; *https://www.ncbi.nlm.nih.gov/gap*), to access the data and metadata files.

Visit our Data Access Guide for more information: *https://ocg.cancer.gov/flowchart/guide-accessing-data*

Accessing CGCI and TARGET Data

Genomic profiles (molecular characterization and sequence data) and clinical data for a variety of tumor types are easily accessible through each program's Data Matrix. Researchers can access up to four levels of data, from primary through higher level summary data for the molecular platform employed.

TARGET Data Matrix: *https://target.nci.nih.gov*   **CGCI Data Matrix:** *https://cgci.nci.nih.gov*

Accessing CTD² Data

Raw and analyzed primary data are available through the CTD² Data Portal. The CTD² Dashboard is a web interface which assembles Network Center-generated conclusions or "observations" with associated supporting evidence. The Dashboard allows easy navigation to a broad range (computational and non-computational) of scientists. All data generated by this Network are open access.

CTD² Data Portal: *https://ctd2.nci.nih.gov/dataPortal/*   **CTD² Dashboard:** *https://ctd2-dashboard.nci.nih.gov/dashboard/*

Accessing the Genomics Data Commons (GDC)

NCI's Genomic Data Commons is a data repository led by the Center for Cancer Genomics that enables data sharing from cancer genomic studies in support of precision oncology. The GDC provides a platform for efficiently querying, analyzing, and downloading integrated clinical and sequence data from 35,000 (and growing) donors. The GDC also provides a high-throughput Data Transfer Tool and an Application Programming Interface (API) for software-based access. *https://gdc.cancer.gov/access-data*

Contact us at the Office of Cancer Genomics, Center for Cancer Genomics, NCI

Phone: (240) 781-3280   **Email:** *ocg@mail.nih.gov*   **Twitter:** *https://twitter.com/NCIgenomics*
Web: To learn more about OCG or sign up for email updates, visit *https://ocg.cancer.gov*
Publications: OCG-supported manuscripts are found at *https://ocg.cancer.gov/news-publications*
e-News: Features research spotlights, educational articles, guest editorials by OCG-supported scientists, and more at *https://ocg.cancer.gov/news-publications/e-newsletters*

Other Resources

Gabriella Miller Kids First Pediatric Research Program NCI/OCG provides programmatic support to this NIH Common Fund initiative whose goal is to better understand the role of genetics in various pediatric cancers and structural birth defects. This program provides genomic and transcriptomic sequencing and analyses for cancer cohorts which were selected through a review process. The data from the cancer cohorts will be available through the Kids First Data Resource Center being developed at the Children's Hospital of Pennsylvania. *https://commonfund.nih.gov/KidsFirst*

Cancer Genome Anatomy Project (CGAP) Online resource of biological tissue characterization data and tools for analyzing these data. CGAP also provides the Mitelman database of chromosomal aberrations in cancer. *https://cgap.nci.nih.gov*. **Contact OCG for a free CD tutorial of the CGAP website**.

Mammalian Gene Collection (MGC) Open access bank of full-length open reading frame clones for the majority of protein-coding human and mouse genes. Other species collections (e.g. cow, rat, xenopus, and zebrafish genes) are also available. *https://mgc.nci.nih.gov/*.

The ORFeome Collaboration (OC) Collection of validated, expression-ready, full-length open reading frames for most of the currently defined human genes. *http://www.nature.com/nmeth/journal/v13/n3/full/nmeth.3776.html*.