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 ultimate goal to improve clinical outcomes. OCG supports large-scale cancer genomic and translational research programs that accelerate discoveries into the clinic, thereby contributing to precision medicine. All OCG programs share data and resources with the research community. OCG initiatives promote:

- The dissemination of up-to-date data via programmatic databases and the Genomic Data Commons
- Advances in bioinformatics technology
- Creation of valuable experimental reagents, resources, and models

OCG Programs

**HCMI - Human Cancer Models Initiative**

The HCMI is an international consortium created by the National Cancer Institute, Cancer Research UK, the foundation Hubrecht Organoid Technology, and Wellcome Trust Sanger Institute. The HCMI is generating novel human tumor-derived models to more closely mirror the architecture and cellular heterogeneity of human tumors. HCMI-developed models along with patient associated clinical and molecular data will be available to researchers as a community resource in an effort to advance cancer and other research.


**CTD² - Cancer Target Discovery and Development Network**

The CTD² Network bridges a major gap between cancer genomics and precision oncology by mining large-scale genomic datasets for alterations important in cancer etiology and translating the discoveries into treatment. 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 from the website.

[https://ocg.cancer.gov/programs/ctd2](https://ocg.cancer.gov/programs/ctd2)

**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 acute lymphoblastic and myeloid leukemia, neuroblastoma, osteosarcoma, and several types of kidney tumors. TARGET is organized into a collaborative consortium of disease-specific project teams that focus on identifying alterations that can be targeted using existing therapeutic agents and/or to inform improved treatment strategies.


**CGCI - Cancer Genome Characterization Initiative**

CGCI supports research to comprehensively catalog the genomic alterations in adult and pediatric cancers. Researchers can use CGCI data to gain insight into the underlying mechanisms of these cancers and identify potential therapeutic targets. The HIV⁺ Tumor Molecular Characterization Project (HTMCP) and the Burkitt Lymphoma Genome Sequencing Project (BLGSP) use genomic and transcriptomic sequencing to uncover distinct features of HIV⁺-associated cancers, including diffuse large B-cell lymphoma, lung carcinoma, cervical carcinoma, along with medulloblastoma and non-Hodgkin lymphoma. [https://ocg.cancer.gov/programs/cgci](https://ocg.cancer.gov/programs/cgci)

**Standard Operating Procedures (SOPs) for BLGSP & HTMCP**

Protocols and templates for submitting samples to large-scale genome characterization initiatives. [https://ocg.cancer.gov/programs/cgci/resources](https://ocg.cancer.gov/programs/cgci/resources)
O CG Data Access

OCG seeks to make data generated through its collaborative programs readily available to the research community in accordance with NIH policies. Data is available in two tiers: Open- and Controlled-access tiers. The latter is to protect the privacy and confidentiality of all patients. Controlled-access tier data files require special authorization.


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 raw/trace files through higher level summary data for the molecular platform employed. To protect patient privacy, some clinical and genetic data require approval for access through NCBI’s database for Genotypes and Phenotypes (dbGAP: https://www.ncbi.nlm.nih.gov/gap).

TARGET Data Matrix: https://target.nci.nih.gov

CGCI Data Matrix: https://cgci.nci.nih.gov

Accessing CTD^2 Data

Raw and analyzed primary data are available through the CTD^2 Data Portal. The CTD^2 Dashboard compiles Network-generated conclusions or “observations” with associated supporting evidence from the Network Centers. It allows easy navigation by both computational experts and those with little bioinformatics experience. All data generated by this initiative are open access.

CTD^2 Data Portal: https://ctd2.nci.nih.gov/dataPortal/

CTD^2 Dashboard: https://ctd2-dashboard.nci.nih.gov/

Accessing the Genomics Data Commons (GDC)

NCI’s Genomic Data Commons is a unified data repository led by the Center for Cancer Genomics that enables data sharing from cancer genomic studies in support of precision oncology. The GDC Data Portal provides a platform for efficiently querying and downloading high quality data. The GDC also provides a GDC Data Transfer Tool and a GDC application programming interface for programmatic access.

https://gdc.cancer.gov/access-data

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

Phone: (301) 451-8027 Email: ocg@mail.nih.gov Twitter: https://twitter.com/NCIgenomics
Web: https://ocg.cancer.gov to learn more about OCG or sign up for email updates
e-News: https://ocg.cancer.gov/news-publications/e-newsletters Online newsletter features research spotlights, educational articles, guest editorials by OCG scientists, and more.

Other Resources

Gabriella Miller Kids First Pediatric Research Program (GMKF) 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. GMKF 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 deposited in the GDC. In the future, the initiative will share results through a large-scale data resource.

https://commonfund.nih.gov/KidsFirst

Cancer Genome Anatomy Project (CGAP) Online resources of biological tissue characterization data, including gene expression profiles of normal, precancerous, and cancerous cells, and tools for analyzing these data. CGAP also provides single nucleotide polymorphism analysis of cancer-related genes and 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. https://mgc.nci.nih.gov/ Some cow, rat, xenopus, and zebrafish genes also available on site links.