

CIP TCGA Radiology Initiative

Background

Driven by input from the scientific community, the **Cancer Imaging Program (CIP)** stands at the crossroad of two powerful scientific requisites: the need for cross-disciplinary research and the increase of inter-institutional data sharing. **The Cancer Imaging Archive (TCIA)** is building a research community focused on connecting cancer phenotypes to genotypes by providing clinical images matched to subjects from **The Cancer Genome Atlas (TCGA)**. TCGA began in 2006 as a three-year pilot jointly sponsored by the National Cancer Institute (NCI) and National Human Genome Research Institute (NHGRI). The TCGA pilot project (focused initially on glioblastoma, ovary, and lung cancers) confirmed that an atlas of genomic changes could be constructed for specific cancer types. It also showed that national networks of research and technology teams working on related projects could pool their efforts, create an economy of scale, and develop an infrastructure for making the data publicly accessible. Freely available data enables researchers across the world to make and validate important discoveries. The success of that pilot encouraged the National Institutes of Health (NIH) to invest in TCGA's efforts to collect and characterize more than 20 additional tumor types and make findings freely accessible for researchers to download via **TCGA Data Portal**.

As an opportunity to leverage this wealth of new biomedical knowledge, CIP used its agreements with TCGA Tissue Site Source institutions to collect clinical diagnostic images for TCIA that match genomically analyzed tissue cases in the 20-plus cancer types that TCGA has characterized.

Ongoing Research Efforts

Imaging Source Site (ISS) Groups are being populated and governed by participants from institutions that have provided imaging data to the archive for a given cancer type. Modeled after TCGA analysis groups, ISS groups are given the opportunity to publish a marker paper for a given cancer type per the guidelines in the table above. This opportunity will generate increased participation in building these multi-institutional data sets as they become an open community resource. Current ISS groups include:

Group Name	Tumor Type
TCGA Bladder Phenotype Research Group	Urothelial Bladder Carcinoma (BLCA)
TCGA Breast Phenotype Research Group	Breast invasive carcinoma (BRCA)
TCGA Glioma Phenotype Research Group	Glioblastoma (GBM), lower grade glioma (LGG)
TCGA Head-Neck Phenotype Research Group	Head-neck squamous cell carcinoma (HNSC)
TCGA Renal Phenotype Research Group	Kidney renal clear cell carcinoma (KIRC)
TCGA Ovarian Phenotype Research Group	Ovarian serous cystadenocarcinoma (OV)

TCGA Collections Publication Guidelines

TCIA publication guidelines, derived from the policy outlined by TCGA, must be followed **in addition** to the TCGA Data Portal publication policy: <http://cancergenome.nih.gov/abouttcga/policies/publicationguidelines>.

There are no limitations on publications containing analyses using TCGA-linked imaging data sets, if the data set meets one of the following three freedom-to-publish criteria:

1. A marker paper has been published on that tumor type; or

2. It has been 12 months since the authors' DICOM data for 100 cases of a given tumor type have been published on TCIA; or
3. The author receives specific approval from the TCGA ISS groups representing any relevant tumor types.

The specific status of each tumor data set is available on the [Data Usage Policies and Restrictions](#) page. Do not hesitate to contact help@cancerimagingarchive.net with any questions.

References

The following links contain publications from the main TCGA project as well as their posted publication guidelines:

- [TCGA Publications](#)
- [TCGA Publication Guidelines](#)

Included below are some posters and presentations which help summarize the CIP TCGA Radiology Initiative and its supporting components such as TCIA.

- [TCIA Workshop at 2014 TCGA Symposium](#) - Presented at TCGA Scientific Symposium, May 12, 2014 in Washington, DC.
- [Imaging and Genomics: Is There a Synergy?](#) - Published in *Radiology* 2012 ,264:329–31.
- [A Scalable Methodology for Correlating Clinical Imaging Features with TCGA Data](#) - Presented at TCGA Network Symposium, November 17–18, 2011 Washington, DC.
- [The Cancer Imaging Archive: a Repository of Advanced Imaging Information Correlated with TCGA Samples](#) - Presented at TCGA Network Symposium, November 17–18, 2011 Washington, DC.