

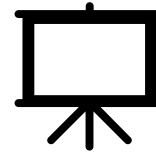
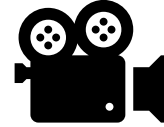
Explore Cancer Imaging and Genomics with the New GDC Imaging Data Commons (IDC) Image Viewer Tool and IDC Viewers

September 9, 2026

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Andrey Fedorov, Ph.D – Associate Professor, Harvard Medical School

Webinar Details

- ***Webinar will be recorded***
- ***Recording and slides will be made available soon***
- ***Type any questions in the Chat panel – they will be addressed at the end***



Agenda

1. *Using the IDC Image Viewer in the GDC*
2. *IDC Slim Viewer – Slide Images*
3. *IDC OHIF Viewer – Radiology Images*
4. *Image and Genomic Resources in the GDC for AI Applications*
5. *Q&A session*

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Using the IDC Image Viewer in the GDC

How to use the IDC Image Viewer in the GDC

<https://portal.gdc.cancer.gov/>

NIH NATIONAL CANCER INSTITUTE GDC Data Portal

Video Guides Send Feedback Browse Annotations Manage Sets Cart 0 Login GDC Apps ▾

Analysis Center Projects **Cohort Builder** Repository

Obtaining Access to Controlled Data

Search: e.g. BRAF, Breast, TCGA-BLCA, T

Genomic Data Commons Data Portal

Harmonized Cancer Datasets

A repository and computational platform for cancer researchers who need to understand cancer, its clinical progression, and response to therapy.

[Explore Our Cancer Datasets](#)

Cases by Major Primary Site

Primary Site	Cases (approximate)
Adrenal Gland	10
Bile Duct	5
Bladder	10
Bone	5
Bone Marrow and Blood	100
Brain	20
Breast	30
Cervix	10
Colorectal	20
Esophagus	5
Eye	5
Head and Neck	10
Kidney	15
Liver	10
Lung	30
Lymph Nodes	10
Nervous System	10
Ovary	10

Build Cohort

Unsaved_Cohort Clear All

PROJECT ← TCGA-LUAD × ×

×

COHORT BUILDER

Search

General

Demographic

General Diagnosis

Disease Status and History

Disease Specific Classifications

Program

Name ^

Cases v

☐ TCGA 585 (1.16%)

Project

Search

Name v

Cases v

☐ TARGET-WT 652 (1.29%)

☐ TCGA-GBM 617 (1.22%)

☐ TCGA-OV 608 (1.20%)

☒ TCGA-LUAD 585 (1.16%)

Disease Type

Name ^

Cases v

☐ acinar cell neoplasms 24 (0.05%)

☐ adenomas and adenocarci... 543 (1.07%)

☐ cystic, mucinous and serou... 15 (0.03%)

☐ ductal and lobular neoplasms 3 (0.01%)

Save Cohort



 Video Guides  Send Feedback

 Analysis Center

 Projects

 Cohort Builder

 Repository

 Unsaved_Cohort  

Cohort not saved

Unsaved_Cohort [Clear All](#)

PROJECT  TCGA-LUAD  

Save Cohort

Save

Save As

Go to Analysis Center

**NATIONAL CANCER INSTITUTE**
GDC Data Portal

 Video Guides

 Send Feedback

 Browse Annotations

 Analysis Center

 Projects

 Cohort Builder

 Repository

Obtaining Access to

 TCGA-LUAD ▼

 ▼









TCGA-LUAD Clear All

PROJECT ← TCGA-LUAD × ×

Choose IDC Image Viewer

TCGA-LUAD

▼

+







▼ 585 CASES



ANALYSIS TOOLS




Demo

BAM Slicing Download ▼
584 Cases




Demo

Clinical Data Analysis ▼
585 Cases




Demo

Cohort Comparison ▼
585 Cases




Demo

Cohort Level MAF ▼
559 Cases




Demo

Copy Number Segment ▼
503 Cases




Demo

Correlation Plot ▼
585 Cases




Demo

Gene Expression Clustering ▼
518 Cases




Demo

IDC Image Viewer ▼
585 Cases




Demo

Mutation Frequency ▼
570 Cases




Demo

OncoMatrix ▼
570 Cases




Demo

ProteinPaint ▼
559 Cases




Demo

Sequence Reads ▼
584 Cases

Choose Case

TCGA-LUAD Clear All

PROJECT ← TCGA-LUAD ×

× IDC IMAGE VIEWER

IDC IMAGE VIEWER

TOTAL OF **560** CASES

Search

GDC Case ID	Program	Project	IDC Studies (Click to expand)
TCGA-05-4244	TCGA	TCGA-LUAD	1 IDC study (1 Histopathology + 0 Radiology)
TCGA-05-4245	TCGA	TCGA-LUAD	1 IDC study (1 Histopathology + 0 Radiology)
TCGA-05-4249	TCGA	TCGA-LUAD	1 IDC study (1 Histopathology + 0 Radiology)

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IDC Slim Viewer –
Slide Images

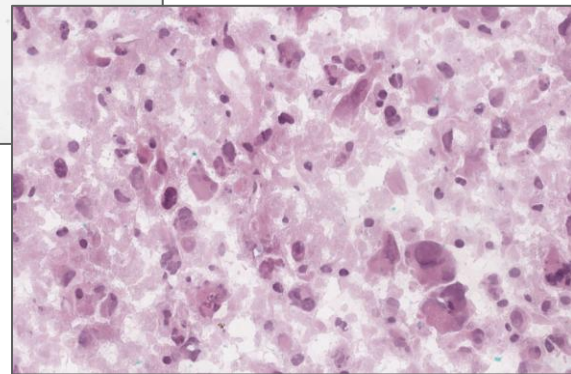
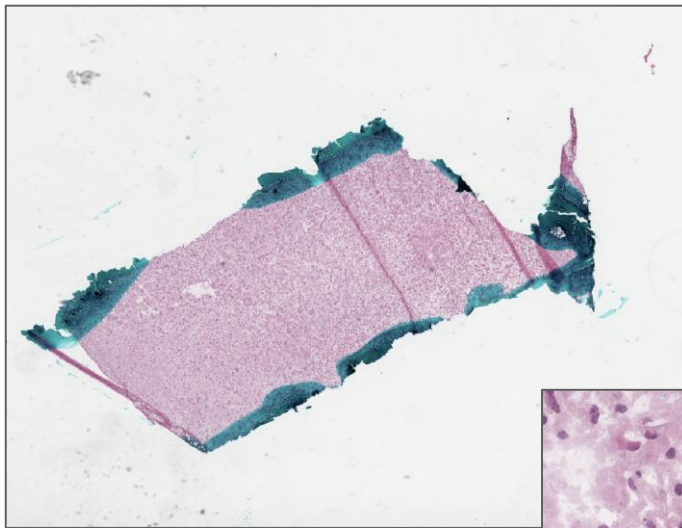
IDC OHIF Viewer –
Radiology Images

A large, stylized blue chevron graphic pointing to the right, composed of two overlapping shapes, occupies the left side of the slide.

Image and Genomic Resources in the GDC for AI Applications

Projects with slide images available in the GDC

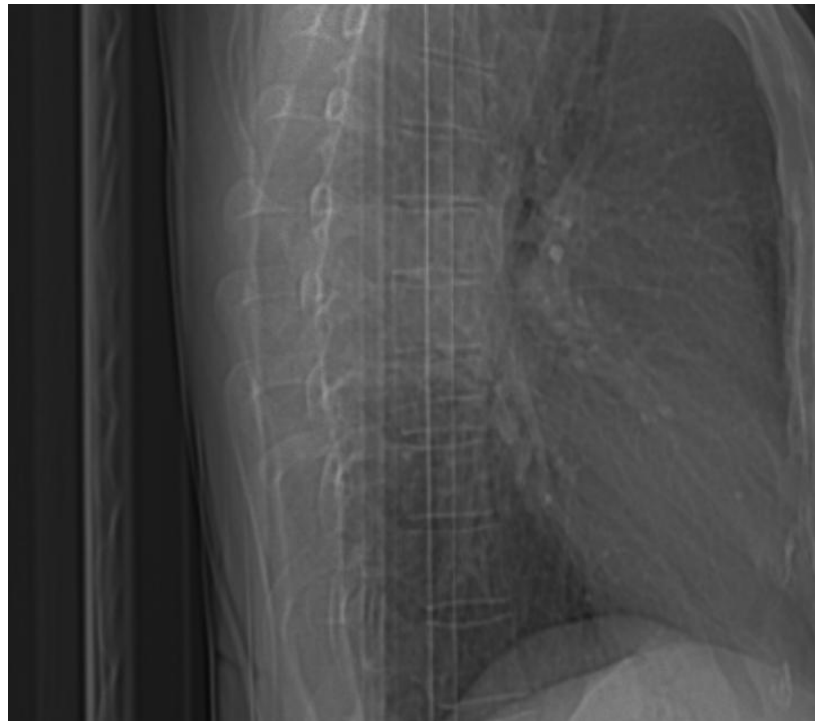
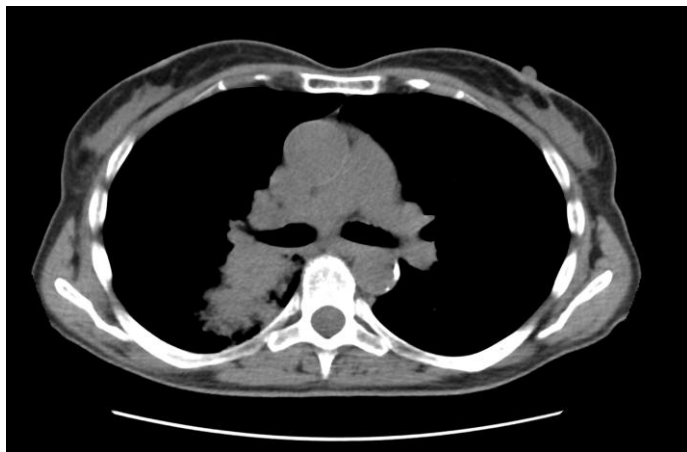
- 32 TCGA projects
 - All except TCGA-LAML
- ALCHEMIST-ALCH
- CCDI-MCI *
- CCG-CUPP
- CDDP-EAGLE
- CGCI projects
- HCMI-CMDC



* Only available through the IDC viewer

GDC Projects with radiology images available through the IDC viewer

- CPTAC
- 18 TCGA projects
- VAREPOP-APOLLO



AI Use Case: Cancer Type Classification (1/2)

- Diagnose and classify cancer types using whole slide images (WSI)
- Classify cancer types based on SNPs or gene expression data
- Determine the risk of metastasis by classifying cancer cells

AI Use Case: Cancer Type Classification (2/2)

- Whole slide image files → Repository
- Cancer types → Clinical export in cohort builder
 - `primary_diagnosis` field
- SNPs → Mutation frequency tool
 - Alternatives: *ssm_occurrences* API endpoint or MAF files
- Gene expression → Gene expression tool
 - Alternatives: *gene_expression* API endpoints or STAR-count files

AI Use Case: Predictive Analysis (1/2)

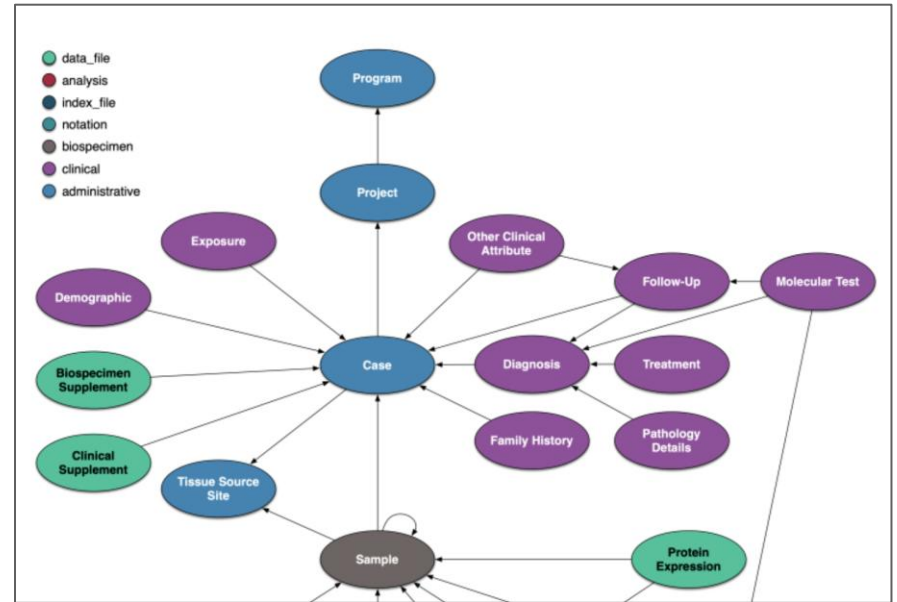
- Use WSI to predict mutations
- Apply deep learning to predict cancer stages and survival outcomes

AI Use Case: Predictive Analysis (2/2)

- Whole slide image files → Repository
- Cancer stages → Clinical export in cohort builder
- Survival data → Clinical data tool
 - Alternative: API survival endpoint or clinical data export

Metadata Definitions

- GDC Data Model →
- GDC Dictionary
 - Contains links to curated databases
 - caDSR + NCIt



Properties

Property	Description	Acceptable Types or Values	Required?	CDE
⚙️ age_at_diagnosis	Age at the time of diagnosis expressed in number of days since birth.	• One of: • integer • null	Yes	10609539 - caDSR

Additional Information for Users

- GDC Website: <https://gdc.cancer.gov>
 - Previous webinars
- GDC Documentation: <https://docs.gdc.cancer.gov/>
 - User's guides
 - Pipeline overviews
 - GDC data dictionary search tool and viewer
- Questions? Contact the GDC Help Desk
 - **support@nci-gdc.datacommons.io**

U.S. Department of Health & Human Services
National Institutes of Health | National Cancer Institute

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

1-800-4-CANCER

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