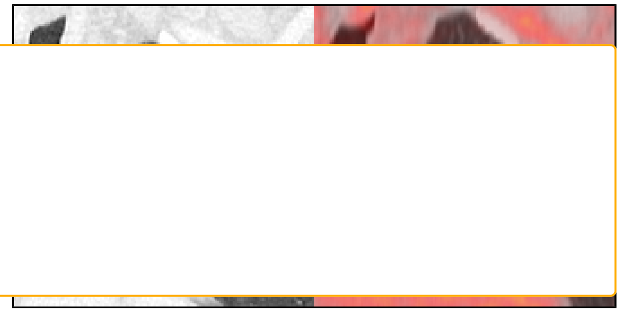
NSCLC Radiogenomics

Summary



Redirection Notice

This page will redirect to https://www.cancerimagingarchive.net/collection/nsclc-radiogenomics/ in about 5 seconds.

Medical image biomarkers of cancer promise improvements in patient care through advances in precision medicine. Compared to genomic biomarkers, image biomarkers provide the advantages of being a non-invasive procedure, and characterizing a heterogeneous tumor in its entirety, as opposed to limited tissue available for biopsy. We developed a unique radiogenomic dataset from a Non-Small Cell Lung Cancer (NSCLC) cohort of 211 subjects. The dataset comprises Computed Tomography (CT), Positron Emission Tomography (PET)/CT images, semantic annotations of the tumors as observed on the medical images using a controlled vocabulary, segmentation maps of tumors in the CT scans, and quantitative values obtained from the PET/CT scans. Imaging data are also paired with gene mutation, RNA sequencing data from samples of surgically excised tumor tissue, and clinical data, including survival outcomes. This dataset was created to facilitate the discovery of the underlying relationship between genomic and medical image features, as well as the development and evaluation of prognostic medical image biomarkers.

Further details regarding this data-set may be found in Bakr, et. al, Sci Data. 2018 Oct 16;5:180202. doi: 10.1038/sdata.2018.202, https://www.ncbi.nlm.nih.gov/pubmed/30325352.

For scientific and other inquiries about this dataset, please contact TCIA's Helpdesk.

Data Access

Data Access

Data Type	Download all or Query/Filter	License
Images and Segmentations (DICOM, 97.6 GB)	*Download* *Search* (Download requires NBIA Data Retriever)	CC BY 3.0
AIM Annotations (XML, zip, 436 kB)	*Download*	CC BY 3.0
Clinical Data (csv, 46 kB)	*Download*	CC BY 3.0

Click the Versions tab for more info about data releases.

Additional Resources for this Dataset

The NCI Cancer Research Data Commons (CRDC) provides access to additional data and a cloud-based data science infrastructure that connects data sets with analytics tools to allow users to share, integrate, analyze, and visualize cancer research data.

- Imaging Data Commons (IDC) (Imaging Data)

The following external resources have been made available by the data submitters. These are not hosted or supported by TCIA, but may be useful to researchers utilizing this collection.

- RNA sequence data (Note: 130 subject subset)

Third Party Analyses of this Dataset

TCIA encourages the community to publish your analyses of our datasets . Below is a list of such third party analyses published using this Collection:

- Crowds Cure Cancer: Data collected at the RSNA 2018 annual meeting (Crowds-Cure-2018)
- NSCLC Radiogenomics: Initial Stanford Study of 26 Cases (NSCLC Radiogenomics-Stanford)

Detailed Description

Detailed Description

Collection Statistics	
Modalities	CT, PT, SEG
Number of Participants	211
Number of Studies	395
Number of Series	1351
Number of Images	286754
Image Size (GB)	91.3

This collection was originally submitted to TCIA as a 26 subject pilot data set. You can learn more about that subset of the collection in the following Analysis Results publication:

> **Data Citation**
>
> Napel, Sandy, & Plevritis, Sylvia K. (2014). **NSCLC Radiogenomics: Initial Stanford Study of 26 Cases**. The Cancer Imaging Archive. http://doi.org/10.7937/K9/TCIA.2014.X7ONY6B1

Citations & Data Usage Policy

Citations & Data Usage Policy

Users must abide by the TCIA Data Usage Policy and Restrictions. Attribution should include references to the following citations:

> **Data Citation**
>
> Bakr, S., Gevaert, O., Echegaray, S., Ayers, K., Zhou, M., Shafiq, M., Zheng, H., Zhang, W., Leung, A., Kadoch, M., Shrager, J., Quon, A., Rubin, D., Plevritis, S., & Napel, S. (2017). **Data for NSCLC Radiogenomics (Version 4) [Data set]**. The Cancer Imaging Archive. https://doi.org/10.7937/K9/TCIA.2017.7hs46erv

Publication Citation

Bakr, S., Gevaert, O., Echegaray, S., Ayers, K., Zhou, M., Shafiq, M., Zheng, H., Benson, J. A., Zhang, W., Leung, A., Kadoch, M., Hoang, C. D., Shrager, J., Quon, A., Rubin, D. L., Plevritis, S. K., & Napel, S. (2018). **A radiogenomic dataset of non-small cell lung cancer.** *Scientific data*, *5*, 180202. https://doi.org/10.1038/sdata.2018.202

Publication Citation

Gevaert, O., Xu, J., Hoang, C. D., Leung, A. N., Xu, Y., Quon, A., … Plevritis, S. K. (2012, August). **Non–Small Cell Lung Cancer: Identifying Prognostic Imaging Biomarkers by Leveraging Public Gene Expression Microarray Data—Methods and Preliminary Results.** Radiology. Radiological Society of North America (RSNA). http://doi.org/10.1148/radiol.12111607

TCIA Citation

Clark, K., Vendt, B., Smith, K., Freymann, J., Kirby, J., Koppel, P., Moore, S., Phillips, S., Maffitt, D., Pringle, M., Tarbox, L., & Prior, F. (2013). **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository.** In Journal of Digital Imaging (Vol. 26, Issue 6, pp. 1045–1057). Springer Science and Business Media LLC. https://doi.org/10.1007/s10278-013-9622-7 PMCID: PMC3824915

Other Publications Using This Data

TCIA maintains a list of publications that leverage TCIA data.

- Aonpong, P., Iwamoto, Y., Han, X. H., Lin, L., & Chen, Y. W. (2021). Improved Genotype-Guided Deep Radiomics Signatures for Recurrence Prediction of Non-Small Cell Lung Cancer Annu Int Conf IEEE Eng Med Biol Soc, 2021, 3561-3564. doi:https://doi.org/10.1109/EMBC46164.2021.9630703
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If you have a manuscript you'd like to add please contact TCIA's Helpdesk.

Versions

Version 4 (Current): Updated 2021/06/01

Data Type	Download all or Query/Filter
Images (DICOM, 97.6 GB)	*Download* *Search* (Download requires the NBIA Data Retriever)
AIM Annotations (XML, zip)	*Download*
Clinical Data (csv)	*Download*

- Added missing image studies for the following cases: R01-009 (CT), R01-100 (PET/CT), and R01-111 (PET/CT).
- SUV conversion factor DICOM tag (7053,1000) was added for the following Philips PET images: R01-074, R01-077, R01-079, R01-089, R01-98 and R01-137.

Version 3: Updated 2020/11/10

Data Type	Download all or Query/Filter
Images (DICOM, 97.6 GB)	*Download* (Download requires the NBIA Data Retriever)
AIM Annotations (XML, zip)	*Download*
Clinical Data (csv)	*Download*

- A new version of RO1-023 was created to correct a cranial-caudal flip of the segmentation of the CT volume (483 images) and associated Segmentation object. The UIDs of the other scans were updated to preserve Study level consistency but were otherwise unmodified. The referenced UIDs within the AIM object for RO1-023 were updated and renamed to RO1-023v1.
- RO1-038 was updated to remove a coronal slice at the start of the of the CT volume. This created difficulty for some software to determine slice spacing.

Version 2: Updated 2017/02/28

Data Type	Download all or Query/Filter
Images (DICOM, 97.6 GB)	*Download* (Download requires the NBIA Data Retriever)
AIM Annotations (XML, zip)	*Download*
Clinical Data (csv)	*Download*

Version 1: Updated 2015/12/22

This collection was originally submitted to TCIA as a 26 subject pilot data set. You can learn more about that subset of the collection in the following Analysis Results publication:

NSCLC Radiogenomics: Initial Stanford Study of 26 Cases