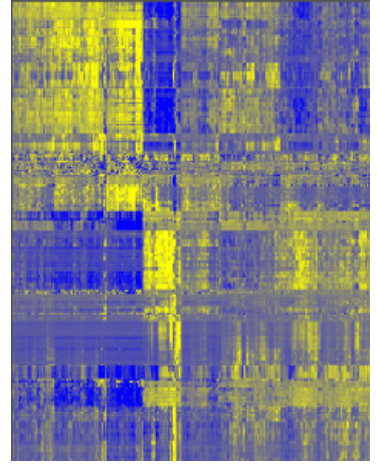




# NSCLC-Radiomics-Genomics



# Summary

This collection contains images from 89 non-small cell lung cancer (NSCLC) patients that were treated with surgery. For these patients pretreatment CT scans, gene expression, and clinical data are available. This dataset refers to the Lung3 dataset of the [study published in Nature Communications](#).

In short, this publication applies a radiomic approach to computed tomography data of 1,019 patients with lung or head-and-neck cancer. Radiomics refers to the comprehensive quantification of tumour phenotypes by applying a large number of quantitative image features. In present analysis 440 features quantifying tumour image intensity, shape and texture, were extracted. We found that a large number of radiomic features have prognostic power in independent data sets, many of which were not identified as significant before. Radiogenomics analysis revealed that a prognostic radiomic signature, capturing intra-tumour heterogeneity, was associated with underlying gene-expression patterns. These data suggest that radiomics identifies a general prognostic phenotype existing in both lung and head-and-neck cancer. This may have a clinical impact as imaging is routinely used in clinical practice, providing an unprecedented opportunity to improve decision-support in cancer treatment at low cost.


The dataset described here (Lung3) was used to investigate the association of radiomic imaging features with gene-expression profiles. The Lung2 dataset used for training the radiomic biomarker and consisting of 422 NSCLC CT scans with outcome data can be found here: [NSCLC-Radiomics](#). Other datasets hosted on TCIA that are described in this study include: [Head-Neck-Radiomics-HN1](#), [NSCLC-Radiomics-Interobserver1](#), [RIDER Lung CT Segmentation Labels from: Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach](#).

For scientific or other inquiries about this dataset, please [contact the TCIA Helpdesk](#).

## Data Access

### Data Access

Click the **Download** button to save a ".tcia" manifest file to your computer, which you must open with the [NBIA Data Retriever](#). Click the **Search** button to open our Data Portal, where you can browse the data collection and/or download a subset of its contents.

Data Type	Download all or Query/Filter
Images (DICOM, 6.6GB)	 
Lung3 clinical (CSV)	
Gene Expression (web)	

Click the Versions tab for more info about data releases.

### Detailed Description

## Detailed Description

	Collection Statistics
Modalities	CT
Number of Participants	89
Number of Studies	89
Number of Series	89
Number of Images	13,482
Image Size (GB)	6.6

### Gene-expression Data

Corresponding microarray data acquired for the imaging samples are available at National Center for Biotechnology Information (NCBI) Gene Expression Omnibus (Link to GEO: <http://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE58661>). The patient names used to identify the cases on GEO are identical to those used in the DICOM files on TCIA and in the clinical data spreadsheet.

### Clinical Data

Corresponding clinical data can be found here: [Lung3.metadata.xls](#).

Please note that survival time is measured in days from start of treatment. DICOM patients names are identical in TCIA and clinical data file.

### Citations & Data Usage Policy

## Citations & Data Usage Policy

Users of this data must abide by the [Creative Commons Attribution-NonCommercial 3.0 Unported License](#) under which it has been published.

Attribution should include references to the following citations:

#### Data Citation

Aerts HJWL, Rios Velazquez E, Leijenaar RTH, Parmar C, Grossmann P, Carvalho S, Bussink J, Monshouwer R, Haibe-Kains B, Rietveld D, Hoebers F, Rietbergen MM, Leemans CR, Dekker A, Quackenbush J, Gillies RJ, & Lambin P. (2015). **Data From NSCLC-Radiomics-Genomics**. The Cancer Imaging Archive. <https://doi.org/10.7937/K9/TCIA.2015.L4FRET6Z>

### **i** Publication Citation

Aerts HJWL, Rios Velazquez E, Leijenaar RTH, Parmar C, Grossmann P, Carvalho S, Bussink J, Monshouwer R, Haibe-Kains B, Rietveld D, Hoebers F, Rietbergen MM, Leemans CR, Dekker A, Quackenbush J, Gillies RJ, & Lambin P. (2014) **Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach.** *Nature Communications* 5, 4006 . <https://doi.org/10.1038/ncomms5006>

### **i** 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. **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**, *Journal of Digital Imaging*, Volume 26, Number 6, December, 2013, pp 1045-1057. DOI: <https://doi.org/10.1007/s10278-013-9622-7>

Questions may be directed to [help@cancerimagingarchive.net](mailto:help@cancerimagingarchive.net).





## Other Publications Using This Data

TCIA maintains [a list of publications](#) that leverage our data. At this time we are not aware of any additional publications based on this data. If you have a publication you'd like to add, please [contact the TCIA Helpdesk](#).

## Altmetrics

### Versions

### **Version 1 (Current): Updated 2014/07/02**

Data Type	Download all or Query/Filter
Images (DICOM, 6.6GB)	<div style="display: flex; gap: 10px;"> <span> Download</span> <span> Search</span> </div> <p>(Requires the <a href="#">NBIA Data Retriever</a>.)</p>
Lung3 clinical (CSV)	<div style="display: flex; gap: 10px;"> <span> Download</span> </div>
Gene Expression (web)	<div style="display: flex; gap: 10px;"> <span> Search</span> </div>