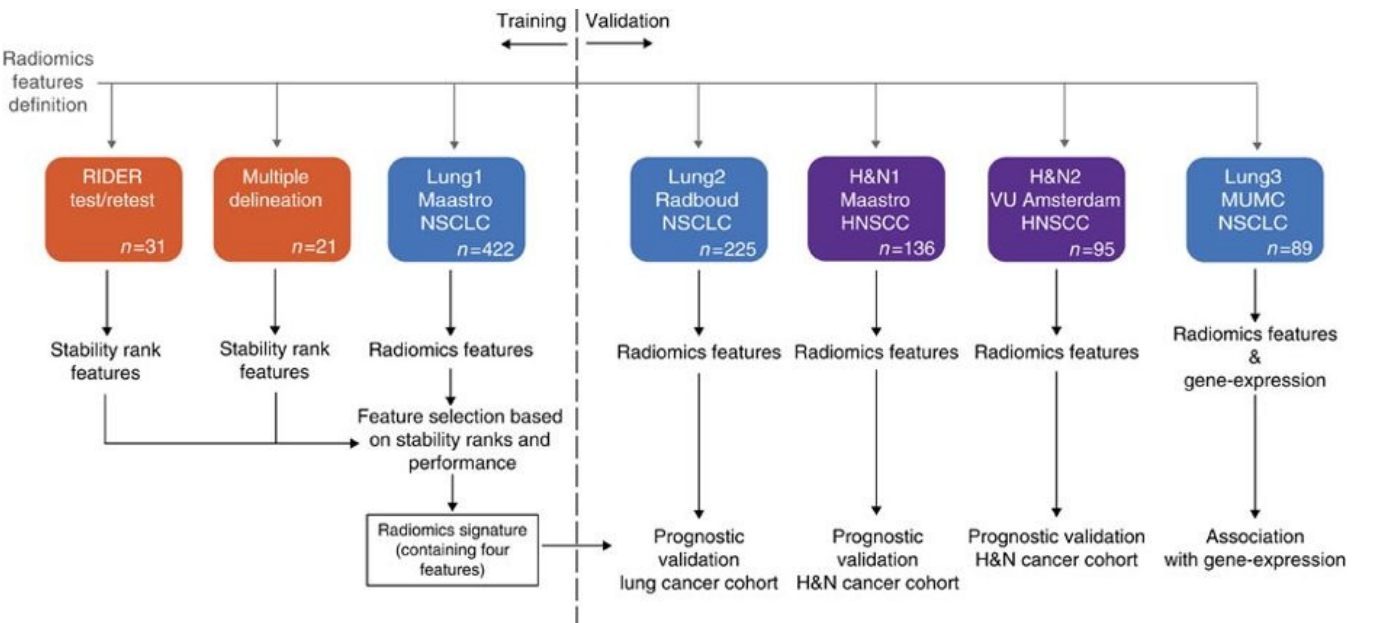


Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach (Radiomics-Tumor-Phenotypes)

Description

This data applies a radiomic approach to computed tomography data of 1,019 patients with lung or head-and-neck cancer which are described in Nature Communications (<http://doi.org/10.1038/ncomms5006>). The various arms of the study are represented in TCIA as distinct Collections including [NSCLC-Radiomics](#) (Lung1), [NSCLC-Radiomics-Genomics](#) (Lung3), [Head-Neck-Radiomics-HN1](#) (H&N1), [NSCLC-Radiomics-Interobserver1](#) (Multiple delineation), and [RIDER Lung CT Segmentation Labels](#) from: Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach (RIDER-LungCT-Seg) (RIDER test/retest).



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.

Data Access

Data Type	Download all or Query/Filter
Image Data (DICOM) and Clinical Data	Please refer to each Collection page to download available images and clinical data: • NSCLC-Radiomics (Lung1) • NSCLC-Radiomics-Genomics (Lung3) • HEAD-NECK-RADIOMICS-HN1 (H&N1) • NSCLC-Radiomics-Interobserver1 (Multiple delineation) • RIDER-LungCT-Seg (RIDER test/retest)

Please contact help@cancerimagingarchive.net with any questions regarding usage.

Additional Resources for this Dataset

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.

- [Genomics data](#) in Gene Expression Omnibus for [NSCLC-Radiomics-Genomics](#) (Lung3) Gene Expression Data

Collections Used in this Analysis

Some data in this collection contains images that could potentially be used to reconstruct a human face. To safeguard the privacy of participants, users must sign and submit a [TCIA No Commercial Limited Access License](#) to help@cancerimagingarchive.net before accessing this portion of the data.

Source Data Type	Download	License
Corresponding Original Images from Head-Neck-Radiomics-HN1 (H&N1) (DICOM)	Download Search (Download requires NBIA Data Retriever)	TCIA No Commercial Limited
Corresponding Original Images from NSCLC-Radiomics (Lung1), NSCLC-Radiomics-Genomics (Lung3), NSCLC-Radiomics-Interobserver1 (Multiple delineation) (DICOM)	Download Search (Download requires NBIA Data Retriever)	CC BY-NC 3.0
Corresponding Original Images from RIDER-LungCT-Seg (RIDER test/retest) (DICOM)	Download (Download requires NBIA Data Retriever)	CC BY 3.0

- [NSCLC-Radiomics](#)
- [NSCLC-Radiomics-Genomics](#)
- [HEAD-NECK-RADIOMICS-HN1](#)
- [NSCLC-Radiomics-Interobserver1](#)
- [RIDER-LungCT-Seg](#)

Detailed Description

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

Aerts, H., Velazquez, E. R., Leijenaar, R. T. H., Parmar, C., Grossmann, P., Carvalho, S., Bussink, J., Monshouwer, R., Haibe-Kains, B., Rietveld, D., Hoebers, F., Rietbergen, M. M., Leemans, C. R., Dekker, A., Quackenbush, J., Gillies, R. J., & Lambin, P. (2014). **Data from: Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach (Radiomics-Tumor-Phenotypes).** [Data set]. The Cancer Imaging Archive. <https://doi.org/10.7937/K9/TCIA.2014..UA0JPGDG>



Publication Citation

Aerts, H. J. W. L., Velazquez, E. R., Leijenaar, R. T. H., Parmar, C., Grossmann, P., Carvalho, S., Bussink, J., Monshouwer, R., Haibe-Kains, B., Rietveld, D., Hoebers, F., Rietbergen, M. M., Leemans, C. R., Dekker, A., Quackenbush, J., Gillies, R. J., & Lambin, P. (2014). **Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach.** Nature Communications, 5(1). <https://doi.org/10.1038/ncomms5006>



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.** Journal of Digital Imaging, 26(6), 1045–1057. <https://doi.org/10.1007/s10278-013-9622-7>

Other Publications Using This Data

TCIA maintains [a list of publications](#) that leverage our data. If you have a manuscript you'd like to add please [contact TCIA's Helpdesk](#).

Versions

Version 2 (Current): 2020/03/23

Added links to the recently published TCIA collections which reflect the additional arms of the study described in Nature Communications (<http://doi.org/10.1038/ncomms5006>).

Data Type	Download all or Query/Filter
Image Data (DICOM) and Clinical Data	Please refer to each Collection page to download available images and clinical data: • NSCLC-Radiomics (Lung1) • NSCLC-Radiomics-Genomics (Lung3) • Head-Neck-Radiomics-HN1 (H&N1) • NSCLC-Radiomics-Interobserver1 (Multiple delineation) • RIDER Lung CT Segmentation Labels from: Decoding tumour phenotype by noninvasive imaging using a quantitative radiomics approach (RIDER test/retest)
NSCLC-Radiomics-Genomics (Lung3) Gene Expression Data	http://www.ncbi.nlm.nih.gov/geo/query/acc.cgi?acc=GSE58661

Version 1 : 2016/08/02

Data Type	Download all or Query/Filter
Image Data (DICOM)	Download
Clinical Data (CSV, XLS)	Download Download
Gene Expression Data	Search