

QIN-HEADNECK

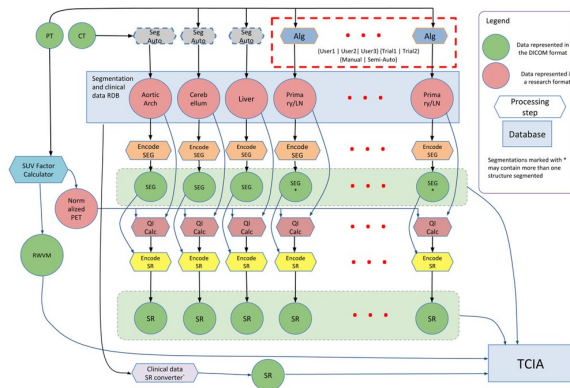
Summary

Redirection Notice

This page will redirect to <https://www.cancerimagingarchive.net/collection/qin-headneck/> in about 5 seconds.

This collection is a set of head and neck cancer patients' multiple positron emission tomography/computed tomography (PET/CT) 18F-FDG scans—before and after therapy—with follow up scans where clinically indicated. The data was provided to help facilitate research activities of the National Cancer Institute's (NCI's) Quantitative Imaging Network (QIN). This collection was supported by Grants: U24 CA180918 (<http://qiicr.org>) and U01 CA140206.

The following schematic summarizes much of the work done within the QIICR grant to augment the PET/CT scans with segmentations and clinical data using the DICOM standard: (click to enlarge)



About the NCI QIN

The mission of the QIN is to improve the role of quantitative imaging for clinical decision making in oncology by developing and validating data acquisition, analysis methods, and tools to tailor treatment for individual patients and predict or monitor the response to drug or radiation therapy. More information is available on the [Quantitative Imaging Network Collections](#) page. Interested investigators can apply to the QIN at: [Quantitative Imaging for Evaluation of Responses to Cancer Therapies \(U01\) PAR-11-150](#).

Data Access

Data Access

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 Restricted License Agreement](#) to help@cancerimagingarchive.net before accessing the data.

Data Type	Download all or Query /Filter	License
Images and Segmentations (DICOM, 201.2 GB)	Download Search (Download requires NBIA Data Retriever)	TCIA Restricted
Clinical Data (.xlsx 68 kB) (See also Detailed Description)	Download	CC BY 3.0

Click the Versions tab for more info about data releases.

Detailed Description

Detailed Description

Collection Statistics	
Modalities	PET, CT, SR, SEG, RWV
Number of Participants	279
Number of Studies	1032
Number of Series	3837
Number of Images	701,002
Image Size (GB)	201.2

Associated Clinical Metadata

- Structured Report DICOM objects (Modality SR), are available for a subset of these subjects in the DICOM downloads and can be distinguished from image files by the series description "Clinical Data." Note, there is no image preview thumbnail for a Structured Report.

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

Beichel, R. R., Ulrich, E. J., Bauer, C., Wahle, A., Brown, B., Chang, T., Plichta, K., Smith, B., Sunderland, J., Braun, T., Fedorov, A., Clunie, D., Onken, M., Magnotta, V. A., Menda, Y., Riesmeier, J., Pieper, S., Kikinis, R., Graham, M.M., Casavant T. L., Sonka M., & Buatti, J. (2015). **Data From QIN-HEADNECK (Version 4) [Data set]**. The Cancer Imaging Archive. <https://doi.org/10.7937/K9/TCIA.2015.K0F5CGLI>

i Publication Citation

Fedorov, A., Clunie, D., Ulrich, E., Bauer, C., Wahle, A., Brown, B., Onken, M., Riesmeier, J., Pieper, S., Kikinis, R., Buatti, J., & Beichel, R. R. (2016). **DICOM for quantitative imaging biomarker development: a standards based approach to sharing clinical data and structured PET/CT analysis results in head and neck cancer research.** In PeerJ (Vol. 4, p. e2057). PeerJ. <https://doi.org/10.7717/peerj.2057>

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. (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> PMID: PMC3824915

Other Publications Using This Data

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

- Ahmadvand, P., Duggan, N., Bénard, F., & Hamarneh, G. (2016). Tumor Lesion Segmentation from 3D PET Using a Machine Learning Driven Active Surface. International Workshop on Machine Learning in Medical Imaging. doi: [10.1007/978-3-319-47157-0_33](https://doi.org/10.1007/978-3-319-47157-0_33)
- Fedorov, A., Beichel, R., Kalpathy-Cramer, J., Clunie, D., Onken, M., Riesmeier, J., . . . Kikinis, R. (2020). Quantitative Imaging Informatics for Cancer Research. JCO Clin Cancer Inform, 4, 444-453. doi:<https://doi.org/10.1200/CCI.19.00165>
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- Ghattas, A. E. (2017). Medical Imaging Segmentation Assessment via Bayesian Approaches to Fusion, Accuracy and Variability Estimation with Application to Head and Neck Cancer. (PhD). The University of Iowa, Retrieved from <http://ir.uiowa.edu/etd/5759>
- Liang, X., Bassenne, M., Hristov, D. H., Islam, M. T., Zhao, W., Jia, M., . . . Xing, L. (2022). Human-level comparable control volume mapping with a deep unsupervised-learning model for image-guided radiation therapy. Comput Biol Med, 141, 105139. doi: [10.1016/j.combiomed.2021.105139](https://doi.org/10.1016/j.combiomed.2021.105139)
- Lv, W., Zhou, Z., Peng, J., Peng, L., Lin, G., Wu, H., . . . Lu, L. (2023). Functional-structural Sub-region Graph Convolutional Network (FSGCN): Application to the Prognosis of Head and Neck Cancer with PET/CT

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- Sinha, A. (2018). Deformable registration using shape statistics with applications in sinus surgery. (Ph. D.). Johns Hopkins University, Retrieved from <http://jhirlibrary.jhu.edu/handle/1774.2/59202>
- Sinha, A., Billings, S. D., Reiter, A., Liu, X., Ishii, M., Hager, G. D., & Taylor, R. H. (2019). The deformable most-likely-point paradigm. *Medical image analysis*, 55, 148-164. doi: [10.1016/j.media.2019.04.013](https://doi.org/10.1016/j.media.2019.04.013)
- Sinha et al. Towards automatic initialization of registration algorithms using simulated endoscopy images. [link to article](#)
- Sinha, A., Ishii, M., Hager, G. D., & Taylor, R. H. (2019). Endoscopic navigation in the clinic: registration in the absence of preoperative imaging. *Int J Comput Assist Radiol Surg*, 14(9), 1495-1506. doi: [10.1007/s11548-019-02005-0](https://doi.org/10.1007/s11548-019-02005-0)
- Smith, B. J., Buatti, J. M., Bauer, C., Ulrich, E. J., Ahmadvand, P., Budzevich, M. M., . . . Beichel, R. R. (2020). Multisite Technical and Clinical Performance Evaluation of Quantitative Imaging Biomarkers from 3D FDG PET Segmentations of Head and Neck Cancer Images. *Tomography*, 6(2), 65-76. doi: [10.18383/j.tom.2020.00004](https://doi.org/10.18383/j.tom.2020.00004)
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- Taghanaki, S. A., Duggan, N., Ma, H., Hou, X., Celler, A., Benard, F., & Hamarneh, G. (2018). Segmentation-free direct tumor volume and metabolic activity estimation from PET scans. *Comput Med Imaging Graph*, 63, 52-66. doi: [10.1016/j.compmedimag.2017.12.004](https://doi.org/10.1016/j.compmedimag.2017.12.004)
- Thomas, R., Schalck, E., Fourure, D., Bonnefoy, A., & Cervera-Marzal, I. (2021). 2Be3-Net: Combining 2D and 3D Convolutional Neural Networks for 3D PET Scans Predictions. Paper presented at the International Conference on Medical Imaging and Computer-Aided Diagnosis (MICAD 2021). doi: [10.1007/978-981-16-3880-0_27](https://doi.org/10.1007/978-981-16-3880-0_27)
- Trebeschi, S., Bodalal, Z., van Dijk, N., Boellaard, T. N., Apfaltrer, P., Tareco Bucho, T. M., . . . Beets-Tan, R. G. H. (2021). Development of a Prognostic AI-Monitor for Metastatic Urothelial Cancer Patients Receiving Immunotherapy. *Front Oncol*, 11, 637804. doi: [10.3389/fonc.2021.637804](https://doi.org/10.3389/fonc.2021.637804)
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Versions

Version 4 (Current) : Updated 2020/09/15

Data Type	Download all or Query/Filter
Images and Segmentations (DICOM 2 01.2 GB)	Download Search (Download requires the NBIA Data Retriever)
Clinical Data (.xlsx 68 kB)	Download

Added 123 new subjects (Patient IDs = QIN-HeadNeck-02-#####). Added missing PT or CT pre-treatment and follow up scans to 28 of the previously existing QIN-HeadNeck-01-##### subjects. Added supporting clinical data in XLSX format for all patients.

Version 3: Updated 2019/07/24

Data Type	Download all or Query/Filter
Images (DICOM, 103.5 GB)	Download
DICOM Metadata Digest (CSV)	Download

Lifted restriction from SR object data download.

Version 2: Updated 2017/12/06

Downloads require the [NBIA Data Retriever](#) .

Data Type	Download all or Query/Filter
Images (DICOM, 104 GB)	Download
DICOM Metadata Digest (CSV)	Download

Added associated DICOM SEG, SR, and RWV objects

Version 1: Updated 2015/08/20

Data Type	Download all or Query/Filter
Images (DICOM, 102.76 GB)	Download
DICOM Metadata Digest (CSV)	Download