

A whole-body FDG-PET/CT dataset with manually annotated tumor lesions (FDG-PET-CT-Lesions)

Summary

Redirection Notice

This page will redirect to <https://www.cancerimagingarchive.net/collection/fdg-pet-ct-lesions/> in about 5 seconds.

Purpose: To provide an annotated data set of oncologic PET/CT studies for the development and training of machine learning methods and to help address the limited availability of publicly available high-quality training data for PET/CT image analysis projects. This data can also be used for machine learning challenges, which is exemplified in the autoPET MICCAI 2022 competition: <https://autopet.grand-challenge.org/>.

Data: The anonymized publication of data was approved by the local ethics committee and data protection officer. 501 consecutive whole body FDG-PET/CT data sets of patients with malignant lymphoma, melanoma and non small cell lung cancer (NSCLC) as well as 513 data sets without PET-positive malignant lesions (negative controls) examined between 2014 and 2018 at the University Hospital Tübingen were included. All examinations were acquired on a single, state-of-the-art PET/CT scanner (Siemens Biograph mCT). The imaging protocol consists of a diagnostic CT scan (mainly from skull base to mid-thigh level) with intravenous contrast enhancement in most cases, except for patients with contraindications. The following CT parameters were used: reference dose of 200 mAs, tube voltage of 120 kV, iterative reconstruction with a slice thickness of 2 - 3 mm. In addition, a whole-body FDG-PET scan was acquired 60 minutes after I.V. injection of 300-350 MBq 18F-FDG. PET data were reconstructed using an ordered-subset expectation maximization (OSEM) algorithm with 21 subsets and 2 iterations and a gaussian kernel of 2 mm and a matrix size of 400 x 400.

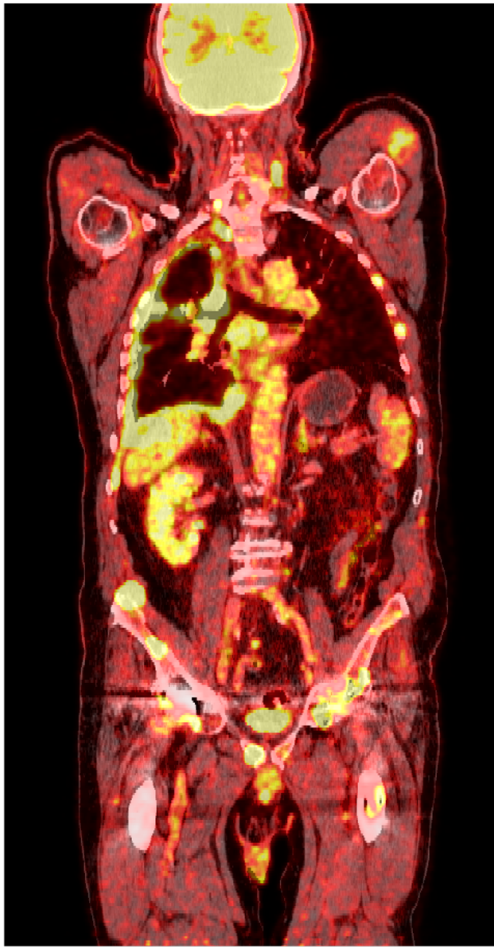
All data sets were analyzed in a clinical setting by a radiologist and nuclear medicine physician in consensus identifying primary tumors and metastases in each data set. All FDG-avid lesions identified as malignant based on patient history and prior examinations were manually segmented on PET images in a slice-per-slice manner by a single reader using dedicated software (NORA imaging platform, University of Freiburg, Germany).

We provide the anonymized original DICOM files of all studies as well as the DICOM segmentation masks. Primary diagnosis, age and sex are provided as non-imaging information (csv). In addition, we provide links to code for you to make a preprocessed version of the data with resampled and aligned PET, CT, and masks as a NIFTI file and in the hdf5 format ready to use in machine learning projects.

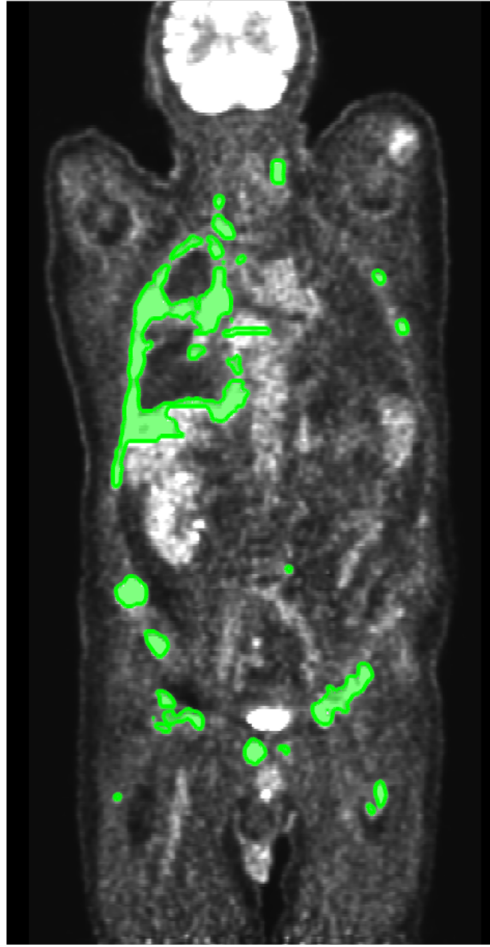
Acknowledgements

We would like to acknowledge the individuals and institutions that have provided data for this collection:

- University Hospital Tübingen, Tübingen, Germany - Special thanks
 - **Christian La Fougère, MD** from the Department of Nuclear Medicine
 - **Tobias Hepp, MD** from the Department of Radiology
 - **Konstantin Nikolaou, MD** from the Department of Radiology
 - **Christina Pfannenberger, MD** from the Department of Radiology
- University Hospital of the LMU (Munich), Germany – Special thanks
 - **Clemens Cyran, MD** from the Department of Radiology
 - **Michael Ingrisich** from the Department of Radiology



whole-body
FDG-PET/CT
image fusion



manual segmentation
of FDG-avid
malignant lesions

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 (DICOM, 418.9 GB)	Download Search (Requires NBIA Data Retriever)	TCIA Restricted
Clinical data (CSV, 1.34 MB)	Download	CC BY 4.0

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.

- Scripts provided by the submitting group for file conversion, preprocessing alignment and resampling of PET, CT and mask data to NIfTI, MHA, and HDF5 formats: https://github.com/lab-midas/TCIA_processing

Detailed Description

Detailed Description

Image Statistics	Radiology Image Statistics
Modalities	PT, CT, SEG
Number of Patients	900
Number of Studies	1014
Number of Series	3042
Number of Images	916,957
Images Size (GB)	418.9

Notes:

Here are conversion scripts for these data https://github.com/lab-midas/TCIA_processing

- Converts DICOM to NIfTI, and also create resampled/resliced CT and an SUV file using `tcia_dicom_to_nifti.py` (requires install of `dicom2nifti` and `matplotlib`)
- It is straight forward to generate HDF5 files from the NIfTI files using `tcia_nifti_to_hdf5.py`.
- Organizes NIfTI into HDF5 structure; note this output is a single large package.

SEG are most easily reviewed as overlay using [MITK viewer](#) or [3D Slicer](#).

Citations & Data Usage Policy

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



Data Citation

Gatidis S, Kuestner T. (2022) **A whole-body FDG-PET/CT dataset with manually annotated tumor lesions (FDG-PET-CT-Lesions) [Dataset]**. The Cancer Imaging Archive. DOI: [10.7937/gkr0-xv29](https://doi.org/10.7937/gkr0-xv29)



Publication Citation

Gatidis, S., Hepp, T., Früh, M., La Fougère, C., Nikolaou, K., Pfannenberger, C., Schölkopf, B., Küstner, T., Cyran, C., & Rubin, D. (2022). **A whole-body FDG-PET/CT Dataset with manually annotated Tumor Lesions**. In Scientific Data (Vol. 9, Issue 1). DOI: [10.1038/s41597-022-01718-3](https://doi.org/10.1038/s41597-022-01718-3)

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: [10.1007/s10278-013-9622-7](https://doi.org/10.1007/s10278-013-9622-7)

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](#).

Versions

Version 1 (Current): Updated 2022/06/02

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Clinical data (CSV)	Download	CC BY 4.0