

# APOLLO-1-VA

## Summary

This data collection consists of images and associated data acquired from the [APOLLO Network](#).

The Applied *Proteogenomics Organizational Learning and Outcomes* (APOLLO) network is a collaboration between NCI, the Department of Defense (DoD), and the Department of Veterans Affairs (VA) to incorporate proteogenomics into patient care as a way of looking beyond the genome, to the activity and expression of the proteins that the genome encodes. The emerging field of proteogenomics aims to better predict how patients will respond to therapy by screening their tumors for both genetic abnormalities and protein information, an approach that has been made possible in recent years due to advances in proteomic technology.



Date-handling policy is described in the Detailed Description section below.

For questions and information regarding this dataset, please contact TCIA Helpdesk at [help@cancerimagingarchive.net](mailto:help@cancerimagingarchive.net).

### 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, <b>2.6 GB</b> )	 
Clinical & Genomic data	<a href="#">Genomic Data Commons</a>

Click the Versions tab for more info about data releases.

### Detailed Description

## Detailed Description

Collection Statistics	
Modalities	PET, CT, MRI, MRA + others
Number of Participants	7
Number of Studies	36
Number of Series	43
Number of Images	6203
Image Size (GB)	2.6

# Summary of APOLLO Date Handling

4/13/2018

De-Identification software consists of the Radiologic Society of North America's (RSNA) Clinical Trials Processor (CTP).

## De-identification of DICOM dates

### The resulting DICOM dates are meaningless yet preserve the relative temporal distance between studies for a patient

De-identification of dates uses the DICOM standard “Retain Longitudinal With Modified Dates Option” which allows dates to be retained as long as they are modified from the original date. Date and Date-Time fields in TCIA DICOM image headers are de-identified by normalizing to a base date of January 1, 1975 and then shifted by the number of days between the original Study Date and an "anchor date". The anchor date for APOLLO is the Date of Diagnosis. The choice of '1975' was arbitrary, but it allows one to ensure that the dates in de-identified DICOM files have been properly de-identified as anything not around that year would be suspect.

TCIA Study Date = 01/01/1975 + (Original Study Date – Date of Diagnosis).

For example, if the original Study Date was 03/29/2018 and the Date of Diagnosis was 03/27/2018 then the Days from Diagnosis would be +2 and the TCIA Study Date would become 01/03/1975.

This technique de-identifies the dates while preserving the longitudinal relationship between dates. Therefore, a researcher won't know the precise date the scan occurred, but if a follow up scan was performed 120 days later, that same 120 day difference between scans of a subject will exist in the TCIA images. Dates that occur in DICOM tags other than Date or Date-Time fields are removed. An example of this would be a date entered into the Series Description field. If the date is associated with a library for Code Meaning then that date is preserved as the date would be required to look up the meaning in the correct version of the library. To show that the dates have been modified, the term “MODIFIED” is written into DICOM tag (0028,0303) “LongitudinalTemporalInformationModified”.

Original dates will be first normalized to 01 January, 1975 and then offset relative to the date of diagnosis. The CTP code for shifting the StudyDate is shown below:

```
<e en="T" t="00080020" n="StudyDate"> @dateinterval(StudyDate,diagnosisdate,PatientID,@NORMDATE)</e>
```

## Insertion of computed "Days from Diagnosis" value

**The inserted "Days from Diagnosis" value can be compared with similar values in the APOLLO clinical data to understand the clinical context of the imaging study**

The number of days the study occurred relative to the date of diagnosis is calculated by the CTP software (using the diagnosis date in the CTP lookup table at the submission site) and automatically stored in the DICOM tag (0012,0050) Clinical Trial Time Point ID with the associated tag (0012,0051) Clinical Trial Time Point Description set to "Days from Diagnosis". The days from diagnosis links the imaging data to the clinical data for a given subject. The CTP code for this is:

```
<e en="T" t="00120050" n="ClinicalTrialTimePointID">@always()@dateinterval(StudyDate,diagnosisdate,PatientID)</e>
```

```
<e en="T" t="00120051" n="ClinicalTrialTimePointDescription">@always()Days offset from diagnosis</e>
```

## Insertion of "Diagnosis Year"

**It is important for cancer researchers to know the timeframe for which the cancer was diagnosed to relate the prescribed cancer treatment or staging to what was available at that time.**

In order to relate the treatments that were available at the time of the diagnosis, the year that the primary diagnosis was made is recorded in a CTP owned group 13 private tag as follows.

```
<e en="T" t="00131051" n="DiagnosisYear">@always()@lookup(PatientID,diagnosisdate)</e>
```

In a separate stage of the pipeline the diagnosisdate is truncated to be just the year that the diagnosis was made.

```
<e en="T" t="00131051" n="DiagnosisYear">@truncate(DiagnosisYear,-4)</e>
```

The approximate StudyYear can be calculated by adding the days from diagnosis in tag ClinicalTrialTimePointID to the DiagnosisYear.

In order to use a normalized date function the private tags must also be de-identified at the site using a CTP script that encapsulates the TCIA Safe Private Tag Knowledge Base. With this approach, only the Safe Private Tags contained within the TCIA Private Tag Knowledge Base and encoded into the CTP script at the time the CTP script was created will be retained. If there are Private Tags that are known to be important but not part of the current Safe tags of the TCIA Private Tag Knowledge Base, then it is up to the submitting site to submit a Private Tag Dictionary of those tags to TCIA for consideration.

The normalized date workflow described above requires that diagnosis date be present and this workflow does not handle the example where there no diagnosis date is present.

### Citations & Data Usage Policy

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This data set may be subject to usage restrictions set out by the APOLLO network. In addition, TCIA usage and citation guidelines must be followed. See TCIA's [Data Usage Policies and Restrictions](#) for details. Questions may be directed to [help@cancerimagingarchive.net](mailto:help@cancerimagingarchive.net).

**Please be sure to include the following citations in your work if you use this data set:**

### Data Citation

coming soon



### 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. ([paper](#))

## Other Publications Using This Data

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

Versions**Version 1 (Current): Updated 2015/09/14**

Data Type	Download all or Query/Filter
Images (DICOM, <b>2.6 GB</b> )	   (Requires the <a href="#">NBIA Data Retriever</a> .)