

NBIA Search REST API Guide

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Purpose of this Guide

The National Biomedical Imaging Archive (NBIA) REST APIs are provided to access the search and download functions used in the TCIA [radiology portal](#).

The NBIA Search REST APIs, described on this page, allow you to perform basic queries on and download data for image analysis from public collections.

The NBIA Search with Authentication REST APIs, described in the [NBIA Search with Authentication REST API Guide](#), allow you to use the same APIs described on this page to query and download data from restricted collections.

The NBIA Advanced REST APIs, described in the [NBIA Advanced REST API Guide](#), provide advanced features geared towards developers seeking to integrate searching and downloading TCIA data into their own web and desktop applications.

Run APIs Live on the Cloud

You can find examples for using the NBIA APIs with Python in these [Jupyter Notebooks](#). They are set up so that you can run them in Google Colab without the need to configure your own development environment.

NBIA Search REST API URL and Format

A call includes a base URL followed by the API and query parameters, in that order. The base URL to access *public* data is <https://services.cancerimagingarchive.net/nbia-api/services/v1>.

Base URL for NLST Data

To access [National Lung Screening Trial \(NLST\)](#) data, use the following base URL instead: <https://nlst.cancerimagingarchive.net/nbia-api/services/>

For example, in the following URL:

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getSeries?Collection=RIDER%20Pilot&PatientID=1.3.6.1.4.1.9328.50.1.0001&StudyInstanceUID=1.3.6.1.4.1.9328.50.1.2&format=csv>

- The base URL is <https://services.cancerimagingarchive.net/nbia-api/services/v1/>.
- The API endpoint is `getSeries`.
- The four query parameters are provided as follows: `Collection=RIDER Pilot&PatientID=1.3.6.1.4.1.9328.50.1.0001&StudyInstanceUID=1.3.6.1.4.1.9328.50.1.2&format=csv`
- Data can be obtained in the following formats: CSV, HTML, XML, and JSON. **JSON** is the default return format if no format parameter is specified



- The order in which the query parameters are provided does not matter.
- NBIA Search REST APIs can only access public data. If you want to use these APIs to access restricted collections, see [NBIA Search with Authentication REST API Guide](#).

Image Download APIs

Use the APIs in the following table to download images from TCIA.

Query Name	Return Values	Output Format	Query Parameters	Usage
getImage	<p>An object that represents a set of images in a ZIP file based on <i>SeriesInstanceUID</i>.</p> <p>The naming scheme for the <i>NewFileNames</i> parameter changes from sequential numbers to acquisition number - instance number (in correct order).</p> <p>API example and return values for getImage</p>	ZIP	<p>SeriesInstance UID (R)</p> <p>NewFileNames (O) - Accepted values are Yes and No.</p>	Used for bulk transfer of all images in a series.
getImageWithMD5Hash	<p>All images in the series and MD5 hash values</p> <p>API example and return values for getImageWithMD5Hash</p>	ZIP	SeriesInstance UID (R)	Used for bulk transfer of images with the ability to check MD5Hash.
getSingleImage	<p>A single DICOM Object that is identified by its SeriesInstanceUID and SOPInstanceUID. This API will always be used following the <i>getSOPInstanceUIDs</i>.</p> <p>API example and return values for getSingleImage</p>	Raw DICOM Object	<p>SeriesInstance UID (R)</p> <p>SOPInstanceUID (R)</p>	Used to retrieve a single image.

Image Metadata APIs

Use the APIs in the following table to explore the metadata of objects in the TCIA database. Queries return a file in one of these data formats: CSV, HTML, XML, and JSON. **JSON** is the default return format if no format parameter is specified.

Query Name	Return Values	Query Parameters
getBodyPartValues	Set of all body part names filtered by query keys API example and return values for getBodyPartValues	Collection (O) Modality (O)
getCollectionValues	Set of all collection names API example and return values for getCollectionValues	None
getContentsByName	Return the contents of your cart. To get the name of the cart contents, you must add data to your cart in the TCIA Radiology Portal, and then select Share My Cart . An example of the URL that appears is https://nbia.cancerimagingarchive.net/nbia-search/?saved-cart=nbia-54241629300063058 . The cart name is what follows the equal sign, so in this example, the cart name is nbia-54241629300063058 . API example and return values for getContentsByName	name (R) DateReleased (O)
getManufacturerValues	Set of all manufacturer names filtered by query keys API example and return values for getManufacturerValues	Collection (O) BodyPartExamined (O) Modality (O)
getModalityValues	Set of all modality values (CT, MR, ...) filtered by query keys API example and return values for getModalityValues	Collection (O) BodyPartExamined (O)
NewPatientsInCollection	Set of patients, in a specified collection, since a specified date API example and return values for NewPatientsInCollection	Collection (R) Date (R)
NewStudiesInPatientCollection	Set of new studies for given patient and collection since a specified date API example and return values for NewStudiesInPatientCollection	Collection (R) Date (R) PatientID (R)

getPatient	Set of patient objects filtered by query keys API example and return values for getPatient	Collection (O)
getPatientByCollectionAndModality	Returns a list of PatientIDs, given a specific Collection Name and Modality API example and return values for getPatientByCollectionAndModality	Collection (R) Modality (R)
getPatientStudy	Set of patient/study objects filtered by query keys API example and return values for getPatientStudy	Collection (R) PatientID (O) StudyInstanceUID (O)
getSeries	Set of series objects filtered by query keys API example and return values for getSeries	SeriesInstanceUID (O) StudyInstanceUID (O) Modality (O) ProtocolName (O) SeriesDate (O) SeriesDescription (O) BodyPartExamined (O) SeriesNumber (O) AnnotationsFlag (O) Collection (O) PatientID (O) Manufacturer (O) ManufacturerModelName (O)

		SoftwareVer sions (O) ImageCount (O) TimeStamp (O) LicenseNam e (O) LicenseURI (C) CollectionU RI (O) FileSize (O) StudyDesc (O) StudyDate (O)
getSeriesMetaD ata	All of the metadata for a given SeriesInstanceUID API example and return values for getSeriesMetaData	SeriesInstanc eUID (R) Collection (O) 3rd Party Analysis Data (O) Data Description URI (O) Subject ID (O) Study UID (O) Study Description (O) Study Date (O)

	Series
	Description (O)
)
	Manufacturer (O)
	Modality (O)
	SOP Class
	UID (O)
	Number of
	Images (O)
	File Size (O)
	File
	Location (O)
	Series
	Number (O)
	License
	Name (O)
	License
	URL (O)
	Annotation
	Size (O)
	Series Date (O)
)
	Protocol
	Name (O)
	Body Part
	Examined (O)
	Annotations
	Flag (O)
	Manufacturer
	Model
	Name (O)
	Software
	Versions (O)
	TimeStamp (O)
)

getSeriesSize	Set of total byte size and object count filtered by query key API example and return values for getSeriesSize	SeriesInstanceUID (R)
getSOPInstanceUIDs	A list of SOPInstanceUIDs for a given series using the SeriesInstanceUID API example and return values for getSOPInstanceUIDs	SeriesInstanceUID (R)
getUpdatedSeries	Set of series updated since a specified date API example and return values for getUpdatedSeries	fromDate (R)

Return Values

This section lists and explains the return values of the APIs included in both tables above.



If the value for an attribute is not populated in the specified collection, it will not appear in the returned values.

- [getBodyPartValues](#)
- [getCollectionValues](#)
- [getContentsByName](#)
- [getImage](#)
- [getImageWithMD5Hash](#)
- [getManufacturerValues](#)
- [getModalityValues](#)
- [NewPatientsInCollection](#)
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- [getPatient](#)
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- [getPatientStudy](#)
- [getSeries](#)
- [getSeriesMetaData](#)
- [getSeriesSize](#)
- [getSingleImage](#)
- [getSOPInstanceUIDs](#)
- [getUpdatedSeries](#)

getBodyPartValues

Sample Call

`https://services.cancerimagingarchive.net/nbia-api/services/v1/getBodyPartValues`

Attribute	DICOM Tag	Description
BodyPartExamined	0018, 0015	Standard DICOM definition

Sample Response

```
"[
{ },
{
BodyPartExamined: " "ABD PEL" "
},
{
BodyPartExamined: " "ABD PELV" "
},
{
BodyPartExamined: " "ABDOMEN" "
},
{
BodyPartExamined: " "ABDOMENPELVIS" "
},
"
```

getCollectionValues

Sample Call

`https://services.cancerimagingarchive.net/nbia-api/services/v1/getCollectionValues`

Attribute	DICOM Tag	Description
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.

Sample Response

```
[
{
Collection: "4D-Lung"
},
{
Collection: "AAPM-RT-MAC"
},
{
Collection: "ACRIN-FLT-Breast"
},
{
Collection: "ACRIN-FMISO-Brain"
},
{
Collection: "ACRIN-NSCLC-FDG-PET"
},
]
```

getContentsByName

Sample Call

https://services.cancerimagingarchive.net/nbia-api/services/v1/getContentsByName?name=TCIA_TCGA-PRAD_08-09-2016-v3

Attribute	DICOM Tag	Description
SeriesInstanceUID	0020, 000E	Has been de-identified as part of submission process
StudyInstanceUID	0020, 000D	Has been de-identified as part of submission process.
Modality	0008, 0060	Standard DICOM definition
ProtocolName	0018, 1030	Standard DICOM definition. Has been inspected and cleaned of any PHI.
SeriesDate	0008, 0021	Standard DICOM definition
SeriesDescription	0008, 103E	Standard DICOM definition. Has been inspected and cleaned of any PHI.
BodyPartExamined	0018, 0015	Standard DICOM definition
SeriesNumber	0020, 0011	Standard DICOM definition
AnnotationsFlag	N/A	Indicates if there are annotations for a collection
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
PatientID	0010, 0020	Has been de-identified as part of submission process.
Manufacturer	0008, 0070	Standard DICOM definition
ManufacturerModelName	0008, 1090	Standard DICOM definition
SoftwareVersions	0018, 1020	Standard DICOM definition
ImageCount	N/A	Number of images in the specified series
DateReleased	N/A	The date that TCIA published the series

getImage

The license file, which includes the data usage agreement, is included in the returned ZIP file.

Sample Call

```
https://services.cancerimagingarchive.net/nbia-api/services/v1/getImage?  
SeriesInstanceUID=1.3.6.1.4.1.9328.50.1.216116555221814778114703363464001196508
```

Attribute	DICOM Tag	Description
N/A	N/A	Set of images in a ZIP file

getImageWithMD5Hash

Sample Call

```
https://services.cancerimagingarchive.net/nbia-api/services/v1/getImageWithMD5Hash?  
SeriesInstanceUID=1.3.6.1.4.1.14519.5.2.1.6919.4624.313514201353787659031503464798
```

Attribute	DICOM Tag	Description
N/A	N/A	Set of images in a ZIP file

getManufacturerValues

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getManufacturerValues>

Attribute	DICOM Tag	Description
Manufacturer	0008, 0070	Standard DICOM definition

getModalityValues

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getModalityValues>

Attribute	DICOM Tag	Description
Modality	0008, 0060	Standard DICOM definition

NewPatientsInCollection

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/NewPatientsInCollection?Collection=CBIS-DDSM&Date=2010/08/16>

Attribute	DICOM Tag	Description
PatientID	0010,0020	Has been de-identified as part of submission process.
PatientName	0010,0010	Has been de-identified as part of submission process.
PatientBirth Date	0010,0030	Has been de-identified as part of submission process.
PatientSex	0010,0040	Standard DICOM definition
EthnicGroup	0010,2160	Standard DICOM definition
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
Phantom	0010,0200	Indicates whether or not the subject is a quality control phantom.
SpeciesCode	0010,2202	The taxonomic rank value (e.g., genus, subgenus, species or subspecies) of the Patient.
SpeciesDescription	0010,2201	The taxonomic rank value (e.g., genus, subgenus, species or subspecies) of the Patient.

NewStudiesInPatientCollection

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/NewStudiesInPatientCollection?Collection=CBIS-DDSM&Date=2010/08/16>

Attribute	DICOM Tag	Description
StudyInstanceUID	0020, 000D	Has been de-identified as part of submission process.
StudyDate	0008, 0020	Has been de-identified as part of submission process. Longitudinal information is preserved.
StudyDescription	0008, 1030	Standard DICOM definition. Has been inspected and cleaned of any PHI.
AdmittingDiagnosesDescription	0008, 1080	Standard DICOM definition. Has been inspected and cleaned of any PHI.
StudyID	0020, 0010	Has been de-identified as part of submission process.
PatientAge	0010, 1010	Standard DICOM definition
PatientID	0010, 0020	Has been de-identified as part of submission process.
PatientName	0010, 0010	Has been de-identified as part of submission process.
PatientBirthDate	0010, 0030	Has been de-identified as part of submission process.
PatientSex	0010, 0040	Standard DICOM definition
EthnicGroup	0010, 2160	Standard DICOM definition
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
SeriesCount	N/A	Computed number of series
LongitudinalTemporalEventType	0012, 0053	The type of event to which Longitudinal Temporal Offset from Event (0012,0052) is relative.
LongitudinalTemporalOffsetFromEvent	0012, 0052	An offset in days from a particular event of significance. May be fractional. In the context of a clinical trial, this is often the days since enrollment, or the baseline imaging Study.

getPatient

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getPatient>

Attribute	DICOM Tag	Description
PatientId	0010, 0020	Has been de-identified as part of submission process.
PatientName	0010, 0010	Has been de-identified as part of submission process.
PatientBirth Date	0010, 0030	Has been de-identified as part of submission process.
PatientSex	0010, 0040	Standard DICOM definition
EthnicGroup	0010, 2160	Standard DICOM definition
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
Phantom	0010, 0200	Indicates whether or not the subject is a quality control phantom.
SpeciesCode	0010,2202	The taxonomic rank value (e.g., genus, subgenus, species or subspecies) of the Patient.
SpeciesDescription	0010,2201	The taxonomic rank value (e.g., genus, subgenus, species or subspecies) of the Patient.

getPatientByCollectionAndModality

Sample Call

```
https://services.cancerimagingarchive.net/nbia-api/services/v1  
/getPatientByCollectionAndModality?Collection=VICTRE&Modality=MG
```

Attribute	DICOM Tag	Description
PatientId	0010, 0020	A list of patient IDs for a specified collection and modality

getPatientStudy

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getPatientStudy?Collection=VICTRE&Modality=MG>

Attribute	DICOM Tag	Description
StudyInstanceUID	0020, 000D	Has been de-identified as part of submission process.
StudyDate	0008, 0020	Has been de-identified as part of submission process. Longitudinal information is preserved.
StudyDescription	0008, 1030	Standard DICOM definition. Has been inspected and cleaned of any PHI.
AdmittingDiagnosesDescription	0008, 1080	Standard DICOM definition. Has been inspected and cleaned of any PHI.
StudyID	0020, 0010	Has been de-identified as part of submission process.
PatientAge	0010, 1010	Standard DICOM definition
PatientID	0010, 0020	Has been de-identified as part of submission process.
PatientName	0010, 0010	Has been de-identified as part of submission process.
PatientBirthDate	0010, 0030	Has been de-identified (emptied) as part of submission process.
PatientSex	0010, 0040	Standard DICOM definition
EthnicGroup	0010, 2160	Standard DICOM definition
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
SeriesCount	N/A	Computed number of series
LongitudinalTemporalEventType	0012, 0053	The type of event to which Longitudinal Temporal Offset from Event (0012,0052) is relative.
LongitudinalTemporalOffsetFromEvent	0012, 0052	An offset in days from a particular event of significance. May be fractional. In the context of a clinical trial, this is often the days since enrollment, or the baseline imaging Study.

getSeries

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getSeries?Collection=VICTRE&Modality=MG>

Attribute	DICOM Tag	Description
SeriesInstanceUID	0020, 000E	Has been de-identified as part of submission process
StudyInstanceUID	0020, 000D	Has been de-identified as part of submission process
Modality	0008, 0060	Standard DICOM definition
ProtocolName	0018, 1030	Standard DICOM definition. Has been inspected and cleaned of any PHI.
SeriesDate	0008, 0021	Standard DICOM definition
SeriesDescription	0008, 103E	Standard DICOM definition. Has been inspected and cleaned of any PHI.
BodyPartExamined	0018, 0015	Entered on a per-collection basis using relevant SNOMED terms
SeriesNumber	0020, 0011	Standard DICOM definition
AnnotationsFlag	N/A	Indicates if there are annotations for a collection
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
PatientID	0010, 0020	Has been de-identified as part of submission process
Manufacturer	0008, 0070	Standard DICOM definition
ManufacturerModelName	0008, 1090	Standard DICOM definition
SoftwareVersions	0018, 1020	Standard DICOM definition
ImageCount	N/A	Computed number of images in this series
TimeStamp	N/A	The time that TCIA received the data, which is before curation and publishing

LicenseName	N/A	License that applies to this series
LicenseURI	N/A	URL of license source
CollectionURI	N/A	URI of collection
FileSize	N/A	File size
DateReleased	N/A	The date that TCIA published the series
StudyDescription	0008,1030	Institution-generated description or classification of the Study performed
StudyDate	0008,0020	Date the study started

getSeriesMetaData

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getSeriesMetaData?SeriesInstanceUID=1.3.6.1.4.1.14519.5.2.1.6834.5010.322628904903035357840500590726>

Attribute	DICOM Tag	Description
Series UID	0020, 000E	Standard DICOM definition
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
3rd Party Analysis	N/A	Data from third-party analysis results
Data Description URI	N/A	Location of the data description
Subject ID	N/A	Unique identifier for the subject
Study UID	0020, 000D	Standard DICOM definition
Study Description	0008, 1030	Institution-generated description or classification of the Study (component) performed
Study Date	0008, 0020	Has been de-identified as part of submission process. Longitudinal information is preserved.
Series Description	0020, 0011	Standard DICOM definition. Has been inspected and cleaned of any PHI.
Manufacturer	0008, 0070	Standard DICOM definition
Modality	0008, 0060	Standard DICOM definition
SOP Class UID	N/A	Unique identifier of the SOP Class
Number of Images	N/A	Number of images in this series
File Size	N/A	File size in bytes
File Location	N/A	Location of the file in the file system
Series Number	0020,0011	Standard DICOM definition
License Name	N/A	License that applies to this series

License URL	N/A	URL of license source
Annotation Size	N/A	Size of annotation files in bytes
Date Released	N/A	The date that TCIA published the series
SeriesDate	0008, 0021	Standard DICOM definition
ProtocolName	0018,1030	Name of the protocol
BodyPartExamined	0018, 0015	Entered on a per-collection basis using relevant SNOMED terms
AnnotationsFlag	N/A	Indicates if there are annotations for a collection
ManufacturerModelName	0008, 1090	Standard DICOM definition
SoftwareVersions	0018, 1020	Standard DICOM definition
TimeStamp	N/A	The time that TCIA received the data, which is before curation and publishing

getSeriesSize

Sample Call

```
https://services.cancerimagingarchive.net/nbia-api/services/v1/getSeriesSize?  
SeriesInstanceUID=1.3.6.1.4.1.14519.5.2.1.6834.5010.322628904903035357840500590726
```

Attribute	DICOM Tag	Description
TotalSizeInBytes	N/A	Byte size of the specified series
ObjectCount	N/A	Number of objects in the specified series

getSingleImage

Sample Call

```
https://services.cancerimagingarchive.net/nbia-api/services/v1/getSingleImage?  
SeriesInstanceUID=143.284188174537413748743284550513035752067&SOPInstanceUID=143.  
53599064898089361503082484556513429004
```

Attribute	DICOM Tag	Description
N/A	N/A	Single image in DICOM format

getSOPInstanceUIDs

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getSOPInstanceUIDs?SeriesInstanceUID=1.3.6.1.4.1.9590.100.1.2.374115997511889073021386151921807063992>

Attribute	DICOM Tag	Description
SOPInstanceUID	0008, 0018	Uniquely identifies the SOP Instance

getUpdatedSeries

Sample Call

<https://services.cancerimagingarchive.net/nbia-api/services/v1/getUpdatedSeries?fromDate=28/03/2023>

Attribute	DICOM Tag	Description
SeriesInstanceUID	0020, 000E	Has been de-identified as part of submission process
StudyInstanceUID	0020, 000D	Has been de-identified as part of submission process
Modality	0008, 0060	Standard DICOM definition
ProtocolName	0018, 1030	Standard DICOM definition. Has been inspected and cleaned of any PHI.
SeriesDate	0008, 0021	Standard DICOM definition
SeriesDescription	0008, 103E	Standard DICOM definition. Has been inspected and cleaned of any PHI.
BodyPartExamined	0018, 0015	Entered on a per collection basis using relevant SNOMED terms
SeriesNumber	0020, 0011	Standard DICOM definition
AnnotationsFlag	N/A	Indicates if there are annotations for a collection
Collection	N/A	A label used to name a set of images collected for a specific trial or other reason. Assigned during the process of curating the data.
PatientID	0010, 0020	Has been de-identified as part of submission process.
Manufacturer	0008, 0070	Standard DICOM definition
ManufacturerModelName	0008, 1090	Standard DICOM definition
SoftwareVersions	0018, 1020	Standard DICOM definition
ImageCount	N/A	Number of images in the specified series
DateReleased	N/A	The date that TCIA published the series