

TCIA Programmatic Interface (REST API) Usage Guide - v1

 This documentation is for the original TCIA API. Documentation for the current version can be found [here](#)

Summary

This document describes the initial public release of the TCIA programmatic Interface or REST API implementation. This API is designed for use by developers of image analysis and data mining tools to directly query the public resources of TCIA and retrieve information into their applications. The API complements the existing web interface but eliminates the need for users to visit the TCIA web pages to select and download images then upload them into their viewing and analysis applications. The TCIA Programmatic Interface is based on a middleware platform called Project Bindaas, developed by Emory University and uses REST web service technologies.

The API is a RESTful interface, accessed through web URLs. There is no software that an application developer needs to download in order to use the API. The application developer can build their own access routines using just the API documentation provided. The interface employs a set of predefined query functions (see REST API Directory) that access TCIA databases.

If you are interested in using the API and have any questions, please contact us at help@cancerimagingarchive.net.

```

180 except urllib.HTTPError, err:
181     print "Error executing program: %d\n" % str(err.code) + "\nmessage: " + err.m
182
183 Get images in your apps
184 with the new
185 TCIA REST API
186
187     print "url" + str(response.info())
188     bytesread = response.read()
189     fout = open("images.zip", "wb")
190     fout.write(bytesread)
191     fout.close()
192     print "Downloaded file images.zip from the server"
193
194 else:
195     print "Error : " + str(response.getcode) + print error_code
196     print "url" + str(response.info())

```



Incorporating the TCIA Programmatic Interface into Your Application

Your software that uses the programmatic interface requires an [API-KEY](#). In this version of the programmatic interface, the API-KEY is used to identify the software application. You can obtain one API-KEY and use that for your application; you do not need a separate API-KEY for each user of your software.. To obtain an API-Key please send a request to help@cancerimagingarchive.net or contact TCIA's help desk by phone at: +1 314-747-4254. Please see the coding examples in github: <https://github.com/nadirsaghar/TCIA-REST-API-Client> for guidance on how to incorporate the API-Key into your code. Once you have acquired an API-Key you will need to implement a minimal amount of software in your application to invoke the REST API.

- Coding examples can be found on [GitHub](#)
- Interface documentation can be found on [Mashape](#)
- The interface is registered on [ProgrammableWeb](#)

REST API URL and Format

The full API consists of a base URL followed by the api and the query parameters in that order.

For example, in the following URL:

```
https://services.cancerimagingarchive.net/services/TCIA/TCIA/query/getSeries?  
Collection=TCGA-GBM&PatientID=1.2.3&StudyInstanceUID=4.5.6&format=csv
```

- The base URL is: <https://services.cancerimagingarchive.net/services/TCIA/TCIA/query>
- The API endpoint is **getSeries**
- And the four query parameters are provided as follows: **Collection=TCGA-GBM&PatientID=1.2.3
&StudyInstanceUID=4.5.6&format=csv**
- Data can be obtained in the following formats : CSV,HTML,XML and JSON_.

NOTE: The order in which the query parameters are provided does not matter

With the exception of the **getImage** query, all other queries return one of these data formats : CSV,HTML,XML and JSON_file with results. The first line of the file contains the names of the columns in the response. Each subsequent line corresponds to one row from the TCIA database. The **getImage** query returns a zip of the images.

REST API Directory

Query Name	Return Values	Output Format	Query Key 1	Query Key 2	Query Key 3	Query Key 4	Query Key 5	Query Key 6
getCollectionValues	Set of all collection names	CSV /HTML /XML /JSON	NA	NA	NA	NA		
getModalityValues	Set of all modality values (CT, MR, ...) filtered by query keys	CSV /HTML /XML /JSON	Collection (O)	BodyPart Examined (O)	Modality (O)	NA		
getBodyPartValues	Set of all body part names filtered by query keys	CSV /HTML /XML /JSON	Collection (O)	BodyPart Examined (O)	Modality (O)	NA		
getManufacturerValues	Set of all manufacturer names filtered by query keys	CSV /HTML /XML /JSON	Collection (O)	BodyPart Examined (O)	Modality (O)	NA		
getPatient	Set of patient objects filtered by query keys	CSV /HTML /XML /JSON	Collection (O)	NA	NA	Na		
getPatientStudy	Set of patient/study objects filtered by query keys	CSV /HTML /XML /JSON	Collection (O)	PatientID (O)	StudyInstanceUID (O)	NA		
getSeries	Set of series objects filtered by query keys	CSV /HTML /XML /JSON	Collection (O)	PatientID (O)	StudyInstanceUID (O)	Modality (O)		
getSeriesSize	Set of total byte size and object count filtered by query key	CSV /HTML /XML /JSON	SeriesInstanceUID (R)	NA	NA	NA		
getImage	Set of images in a zip file	ZIP	SeriesInstanceUID (R)	NA	NA	NA		

Return Values

Collection

An object that represents Collection (project) values.

Attribute	DICOM Tag	Description
Collection	NA	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.

Modality

An object that represents Modality values.

Attribute	DICOM Tag	Description
Modality	0008 0060	Standard DICOM definition

BodyPartExamined

An object that represents BodyPartExamined values.

Attribute	DICOM Tag	Description
BodyPartExamined	0018 0015	Standard DICOM definition

Manufacturer

An object that represents Manufacturer values.

Attribute	DICOM Tag	Description
Manufacturer	0008 0070	Standard DICOM definition

Patient

An object that represents one patient.

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.
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	NA	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.

PatientStudy

An object that represents one DICOM imaging study performed on one patient.

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	NA	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	NA	Computed number of series.

Series

An object that represents one imaging series.

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	NA	
Collection	NA	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	NA	Computed number of images in this series.

SeriesSize

An object that represents set of total byte size and object count filtered by query key SeriesInstanceUID.

Attribute	DICOM Tag	Description
TotalSizeInBytes	NA	Total byte size per series
ObjectCount	NA	Count of total objects per series

Image

An object that represents set of images in zip file based on SeriesInstanceUID.

Attribute	DICOM Tag	Description
NA	NA	Set of images in a zip file

Production / Test URLs and Test Data

There are two RESTful servers provided by TCIA. A test system is loaded with a small set of known data to allow you to test your applications. The production system is configured to use the full TCIA database. The query format is the same for both systems. The base URLs are:

Type	URL
Production	https://services.cancerimagingarchive.net/services/TCIA/TCIA/query
Test	https://services-test.cancerimagingarchive.net/services/TCIA/TCIA/query

The test server is loaded with this data:

Collections

Collection
TCGA-KIRC
BREAST-DIAGNOSIS
TCGA-LGG
CT COLONOGRAPHY
LIDC-IDRI
TCGA-GBM
RIDER Lung PET-CT
TCGA-OV
Head-Neck Cetuximab
TCGA-PRAD
NSCLC Radiogenomics
TCGA-BRCA
RIDER PHANTOM MRI
TCGA-KIRP
RIDER PHANTOM PET-CT

PatientStudy

StudyInstanceUID	StudyDate	StudyDescription	AdmittingDiagnosesDescription	StudyID	Patient
1.3.6.1.4.1.14519.5.2 . 1.3344.4004.448358 13026648379039058 1018240	1995-02-26	CT Urogram with 3D	NULL	NULL	NULL
1.3.6.1.4.1.14519.5.2 . 1.4792.2001.627577 51888615375522638 3782162	2008-10-18	Digital Right Mammogram Diagnostic	NULL	NULL	029Y
1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	1991-12-07	FORFILE CD MR ABDOMEN	NULL	NULL	072Y
1.3.6.1.4.1.14519.5.2 . 1.5826.4003.897160 90978039536897100 6445736	2002-12-19	NR MRI BRAIN W /WO	NULL	NULL	042Y
1.3.6.1.4.1.9328.50.4 .10415	2000-01-01	CT SCREENING VIRT COLONOSCOPY	NULL	1	056Y
1.3.6.1.4.1.14519.5.2 . 1.6279.6001.627275 20119267532621574 2498371	2000-01-01	NULL	NULL	NULL	
1.3.6.1.4.1.14519.5.2 . 1.7695.4001.218361 08900053296235485 1713589	2001-06-06	MSTEALTH	NULL	NULL	030Y
1.3.6.1.4.1.9328.50.1 7.171169503015012 48436577537334797 1703543	2006-05-07	NULL	NULL	NULL	000Y
1.3.6.1.4.1.14519.5.2 . 1.7777.4007.207099 37767561191357295 0287222	1992-09-01	CT Chest with	NULL	NULL	060Y

1.3.6.1.4.1.14519.5.2 . 1.5099.8010.199920 08692082317170645 4903251	1999-08-23	Neck^HeadNeckPE TCT	NULL	NULL	000D
1.3.6.1.4.1.14519.5.2 . 1.4334.1501.111558 92563777825881819 5924798	1991-07-17	CT CHEST W CONTRAST	NULL	NULL	062Y
1.3.6.1.4.1.14519.5.2 . 1.9203.4002.259172 23757209718812895 1116391	2002-08-10	NULL	NULL	NULL	041Y
1.3.12.2.1107.5.2.31. 30165.30000008083 115454467100000007	2008-08-31	Physics^EFJ NCI	NULL	1	018Y
1.3.6.1.4.1.14519.5.2 . 1.8421.4010.194703 94627698377772118 2839151	2001-12-12	MRI ABD W+WO CONT	NULL	NULL	052Y
1.2.840.113619.2.55. 3.1602280607.497.1 169961245.459	2007-01-27	NULL	NULL	2324	000Y
1.3.6.1.4.1.14519.5.2 . 1.4792.2001.206552 39603853645881241 1815856	2008-09-09	MRI Right Breast with and without Contrast	NULL	NULL	NULL

Series

SeriesInstanceUID	StudyInstanceUID	Modality	ProtocolName	SeriesDate	SeriesDescription	B
1.3.6.1.4.1.14519.5.2. 1.3344.4004.1356286 75449902768248230 773668	1.3.6.1.4.1.14519.5.2 . 1.3344.4004.448358 13026648379039058 1018240	CR	NULL	1995-02-26	projection urogram	Ki

1.3.6.1.4.1.14519.5.2. 1.3344.4004.2459165 39070518626342817 523833	1.3.6.1.4.1.14519.5.2 . 1.3344.4004.448358 13026648379039058 1018240	CR	NULL	1995-02-26	projection urogram	Ki
1.3.6.1.4.1.14519.5.2. 1.3344.4004.6953626 87239295078523379 159102	1.3.6.1.4.1.14519.5.2 . 1.3344.4004.448358 13026648379039058 1018240	CR	NULL	1995-02-26	projection urogram	Ki
1.3.6.1.4.1.14519.5.2. 1.4792.2001.1166298 32395416985379282 582747	1.3.6.1.4.1.14519.5.2 . 1.4792.2001.627577 51888615375522638 3782162	MG	R CC	2008-10-18	R CC	BR
1.3.6.1.4.1.14519.5.2. 1.4792.2001.3152771 46479798799263416 043844	1.3.6.1.4.1.14519.5.2 . 1.4792.2001.627577 51888615375522638 3782162	MG	R ML	2008-10-18	R ML	BR
1.3.6.1.4.1.14519.5.2. 1.4792.2001.3256714 94514971413459666 872353	1.3.6.1.4.1.14519.5.2 . 1.4792.2001.627577 51888615375522638 3782162	MG	R LM	2008-10-18	R LM	BR
1.3.6.1.4.1.14519.5.2. 1.4792.2001.4551196 34607209467900040 265161	1.3.6.1.4.1.14519.5.2 . 1.4792.2001.627577 51888615375522638 3782162	MG	R CC	2008-10-18	R CC	BR
1.3.6.1.4.1.14519.5.2. 1.4792.2001.9651217 49895519080181571 460714	1.3.6.1.4.1.14519.5.2 . 1.4792.2001.627577 51888615375522638 3782162	MG	R MLO	2008-10-18	R MLO	BR
1.3.6.1.4.1.14519.5.2. 1.4792.2001.2612922 36871631755539819 127331	1.3.6.1.4.1.14519.5.2 . 1.4792.2001.206552 39603853645881241 1815856	MR	T2W_TSE SENSE	2008-09-09	T2W_TSE SENSE	BR
1.3.6.1.4.1.14519.5.2. 1.4792.2001.6197964 75178405006273504 314352	1.3.6.1.4.1.14519.5.2 . 1.4792.2001.206552 39603853645881241 1815856	MR	STIR SENSE	2008-09-09	STIR SENSE	BR

1.3.6.1.4.1.14519.5.2. 1.9203.4004.1371770 99658421704145863 895493	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	T2_FASE AX-KID	1991-12-07	T2 FASE AX-KID	KI
1.3.6.1.4.1.14519.5.2. 1.9203.4004.1432879 88644147518880117 782980	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	T2_FASE COR-KID	1991-12-07	T2 FASE COR-KID	KI
1.3.6.1.4.1.14519.5.2. 1.9203.4004.1970579 52797597751215816 105842	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	AX T2 FSAT-KID	1991-12-07	AX T2 FSAT-KID	KI
1.3.6.1.4.1.14519.5.2. 1.9203.4004.1979008 22168366244860588 196227	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	COR T2 FSAT-KID	1991-12-07	COR T2 FSAT-KID	KI
1.3.6.1.4.1.14519.5.2. 1.9203.4004.3071017 51442496057217506 331577	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	COR LOC	1991-12-07	COR LOC	KI
1.3.6.1.4.1.14519.5.2. 1.9203.4004.3109293 25760238460396080 803881	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	AX FE IN/OUT PH-KID	1991-12-07	AX FE IN/OUT PH-KID	KI
1.3.6.1.4.1.14519.5.2. 1.9203.4004.3375416 98760018003161721 441910	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	2 PLANE LOC	1991-12-07	2 PLANE LOC	KI
1.3.6.1.4.1.14519.5.2. 1.9203.4004.8674322 92739732487344202 298452	1.3.6.1.4.1.14519.5.2 . 1.9203.4004.261688 22436650394708552 5116820	MR	AX T2 FSE- ABDOMEN	1991-12-07	AX T2 FSE- ABDOMEN	KI
1.3.6.1.4.1.14519.5.2. 1.5826.4003.2344403 24836586139233458 033827	1.3.6.1.4.1.14519.5.2 . 1.5826.4003.897160 90978039536897100 6445736	MR	localizer	2002-12-19	localizer	BR

1.3.6.1.4.1.14519.5.2.1.5826.4003.280875379440519752922611246013	1.3.6.1.4.1.14519.5.2.1.5826.4003.897160909780395368971006445736	MR	T2 AX	2002-12-19	T2 AX	BR
1.3.6.1.4.1.14519.5.2.1.5826.4003.282485091576025278124985568977	1.3.6.1.4.1.14519.5.2.1.5826.4003.897160909780395368971006445736	MR	T2 COR	2002-12-19	T2 COR	BR
1.3.6.1.4.1.9328.50.4.10416	1.3.6.1.4.1.9328.50.4.10415	CT	VIRTUAL COLON /Abdomen/Hx	NULL	SUPINE	CC
1.3.6.1.4.1.14519.5.2.1.6279.6001.252988052061080251748760161842	1.3.6.1.4.1.14519.5.2.1.6279.6001.627275201192675326215742498371	DX	NULL	2000-01-01	NULL	CF
1.3.6.1.4.1.14519.5.2.1.7695.4001.172073903217368334328101456736	1.3.6.1.4.1.14519.5.2.1.7695.4001.218361089000532962354851713589	MR	NULL	2001-06-06	Summary Series	BR
1.3.6.1.4.1.9328.50.1.7.109790496340142304700741635171089234345	1.3.6.1.4.1.9328.50.1.7.171169503015012484365775373347971703543	CT	NULL	2006-05-07	CT 2.5mm cb02	CF
1.3.6.1.4.1.9328.50.1.7.209366194844802036292714836428653144268	1.3.6.1.4.1.9328.50.1.7.171169503015012484365775373347971703543	PT	NULL	2006-05-07	3D FBP H10 5min cb02	CF
1.3.6.1.4.1.9328.50.1.7.23371440247832824408105272699654489729	1.3.6.1.4.1.9328.50.1.7.171169503015012484365775373347971703543	PT	NULL	2006-05-07	5min 3D OSEM 8it28sub 7MM CB02	CF
1.3.6.1.4.1.14519.5.2.1.7777.4007.248574192248637448743886883231	1.3.6.1.4.1.14519.5.2.1.7777.4007.207099377675611913572950287222	CT	02_CAP_ONER UN	1992-09-01	CAP 5.0 B60f	OV
1.3.6.1.4.1.14519.5.2.1.7777.4007.287978541705211357222193962912	1.3.6.1.4.1.14519.5.2.1.7777.4007.207099377675611913572950287222	CT	02_CAP_ONER UN	1992-09-01	CAP 5.0 B20f	OV

1.3.6.1.4.1.14519.5.2.1.5099.8010.427264300850965737262860055580	1.3.6.1.4.1.14519.5.2.1.5099.8010.199920086920823171706454903251	CT	HeadNeckPETCT	1999-08-23	CT 5.0 H30s	HE
1.3.6.1.4.1.14519.5.2.1.4334.1501.110141171927780819729628223769	1.3.6.1.4.1.14519.5.2.1.4334.1501.111558925637778258818195924798	CT	5.1 ROUTINE CHEST W/CON	1991-07-17	2.5MM AXIAL CHEST STD ALG.	LU
1.3.6.1.4.1.14519.5.2.1.4334.1501.146380574988448017464290196017	1.3.6.1.4.1.14519.5.2.1.4334.1501.111558925637778258818195924798	CT	5.1 ROUTINE CHEST W/CON	1991-07-17	SCOUT CHEST	LU
1.3.6.1.4.1.14519.5.2.1.9203.4002.224379354792331717697796654541	1.3.6.1.4.1.14519.5.2.1.9203.4002.259172237572097188128951116391	MR	BILATERAL BREAST/1	2002-08-10	Localization	BR
1.3.12.2.1107.5.2.31.30165.2008083111550627984708535.0.0.0	1.3.12.2.1107.5.2.31.30165.30000008083115454467100000007	MR	T1 Flip = 2	2008-08-31	T1 Flip = 2	PH
1.3.12.2.1107.5.2.31.30165.200808311155464169208602.0.0.0	1.3.12.2.1107.5.2.31.30165.30000008083115454467100000007	MR	T1 Flip = 5	2008-08-31	T1 Flip = 5	PH
1.3.12.2.1107.5.2.31.30165.2008083111562588769508673.0.0.0	1.3.12.2.1107.5.2.31.30165.30000008083115454467100000007	MR	T1 Flip = 10	2008-08-31	T1 Flip = 10	PH
1.3.12.2.1107.5.2.31.30165.2008083111570538055908740.0.0.0	1.3.12.2.1107.5.2.31.30165.30000008083115454467100000007	MR	T1 Flip = 15	2008-08-31	T1 Flip = 15	PH
1.3.12.2.1107.5.2.31.30165.2008083111574514678808807.0.0.0	1.3.12.2.1107.5.2.31.30165.30000008083115454467100000007	MR	T1 Flip = 20	2008-08-31	T1 Flip = 20	PH
1.3.12.2.1107.5.2.31.30165.2008083111582438586708870.0.0.0	1.3.12.2.1107.5.2.31.30165.30000008083115454467100000007	MR	T1 Flip = 25	2008-08-31	T1 Flip = 25	PH
1.3.12.2.1107.5.2.31.30165.2008083111590425145308940.0.0.0	1.3.12.2.1107.5.2.31.30165.30000008083115454467100000007	MR	T1 Flip = 30	2008-08-31	T1 Flip = 30	PH
1.3.6.1.4.1.14519.5.2.1.8421.4010.291491240485724911561689071181	1.3.6.1.4.1.14519.5.2.1.8421.4010.194703946276983777721182839151	MR	t1_vibe_tra_p2_bh_dixon	2001-12-12	t1_vibe_tra_p2_bh_dixon_in_FIL	NI

1.2.840.113619.2.131 . 1602280607.1169973 530.4676	1.2.840.113619.2.55. 3.1602280607.497.1 169961245.459	PT	SNMphantom3D	2007-01-27	3D FBP H10 5MIN CB04	PH