

Working with Images in TCIA

ALERT

This is outdated documentation describing an older version of TCIA's software stack. Please refer to the [Cancer Imaging Archive User's Guide](#) for current documentation.

This chapter describes how to review results of TCIA database searches.

Topics in this chapter include:

- [Search Results Overview](#)
 - [Search Results \(Studies for Subject\)](#)
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Search Results Overview

In reviewing search results, it is important to review the hierarchy of submissions in TCIA.

Collection > Patient (Subject) > Study > Series > Images

A [Simple Search](#), [Text Search](#), and [Advanced Search](#) each orders search results by Subject ID on the Search Results (by Subject) page. Clicking that Subject ID displays the studies and image series matching the search criteria for that subject. For more information, see [Search Results \(Studies for Subject\)](#).

You can view images associated with studies for the selected subject in various ways, including:

- viewing all study images in a DICOM web viewer,
- viewing thumbnails of all study images on the [Search Results \(Images for Series\)](#) page
- viewing selected images in your desktop DICOM viewer,
- viewing all study images in an animated [cine loop](#),
- or viewing the DICOM header of the first image in the series.

Retrieving objects for download

At any point in the process of reviewing results, you can [add items](#) - all data pertaining to a patient, study, or an image series - to your data basket. When items are in your data basket, you must take a subsequent step to [download them](#).

When you download a series that has annotation files (indicated by **Yes** in the **Contains Annotations** column), they are automatically downloaded as well.






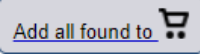

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Search Results (Studies for Subject)

The Search Results (Studies for Subject) page shows studies associated with the subject that you selected on the Search Results by Subject page. Each study, identified by Study Instance ID, Description, and Date, is followed by a table with rows for each image series in the study. At the top and bottom of the page, breadcrumbs in the format **Search >> Study** show the level of the data on the page. Clicking **Search** in those breadcrumbs returns you to your original search results.


The following table describes the data available for each study and image series in that study.

Field	Description
Series	Series identification number
Description	Description of the Series

Modality	Image modality																											
Manufacturer	Name of the manufacturer of the image series																											
Images	Displays the number of images in the series. This number includes visible images that meet the search criteria.																											
Thumbnails	Click  to display thumbnails of the series' images. For more information, see Search Results (Images for Series) .																											
Cine Mode	Click  in a series record to launch an animation of the series. This feature is only available when two or more thumbnails are available for the series. For more information, see Viewing Image Animation .																											
DICOM	<p>Click  to open a new window that displays DICOM metadata about the first image in the series.</p> <div data-bbox="256 575 1214 995" style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center;">DICOM Tags for Image 1.3.6.1.4.1.14519.5.2.1.4334.1501.307417499578617120187809539151</p> <table border="1"> <thead> <tr> <th>Element</th> <th>Name</th> <th>Data</th> </tr> </thead> <tbody> <tr> <td>(0002,0001)</td> <td>File Meta Information Version</td> <td>00\01</td> </tr> <tr> <td>(0002,0002)</td> <td>Media Storage SOP Class UID</td> <td>1.2.840.10008.5.1.4.1.1.2</td> </tr> <tr> <td>(0002,0003)</td> <td>Media Storage SOP Instance UID</td> <td>1.3.6.1.4.1.14519.5.2.1.4334.1501.307417499578617120187809539151</td> </tr> <tr> <td>(0002,0010)</td> <td>Transfer Syntax UID</td> <td>1.2.840.10008.1.2.1</td> </tr> <tr> <td>(0002,0012)</td> <td>Implementation Class UID</td> <td>1.2.40.0.13.1.1.1</td> </tr> <tr> <td>(0002,0013)</td> <td>Implementation Version Name</td> <td>dcm4che-1.4.34</td> </tr> <tr> <td>(0008,0005)</td> <td>Specific Character Set</td> <td>ISO_IR 100</td> </tr> <tr> <td>(0008,0016)</td> <td>SOP Class UID</td> <td>1.2.840.10008.5.1.4.1.1.2</td> </tr> </tbody> </table> </div> <p>Each image series can have multiple images whose thumbnails display in this search results page. While each image has its own DICOM file whose attributes may vary slightly from the others in the series, the DICOM file that opens displays values for only the first image in the series. These values represent the values for all images in the series.</p>	Element	Name	Data	(0002,0001)	File Meta Information Version	00\01	(0002,0002)	Media Storage SOP Class UID	1.2.840.10008.5.1.4.1.1.2	(0002,0003)	Media Storage SOP Instance UID	1.3.6.1.4.1.14519.5.2.1.4334.1501.307417499578617120187809539151	(0002,0010)	Transfer Syntax UID	1.2.840.10008.1.2.1	(0002,0012)	Implementation Class UID	1.2.40.0.13.1.1.1	(0002,0013)	Implementation Version Name	dcm4che-1.4.34	(0008,0005)	Specific Character Set	ISO_IR 100	(0008,0016)	SOP Class UID	1.2.840.10008.5.1.4.1.1.2
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Add to Basket	<ul style="list-style-type: none"> Click  to select the series and  to clear it. To mark <i>all</i> series in the search results as records you want to add to your data basket, click the basket icon in the column header or click . <p>For more information, see Managing the Data Basket.</p>																											
Add a Study series to Basket	To add only the series in a single study in the search results to your basket, click  in the Add This Study to Basket section.																											




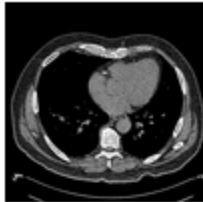
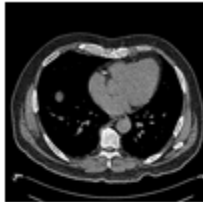












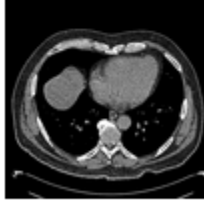
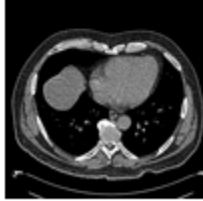

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Search Results (Images for Series)

Clicking the  icon in the Search Results (by Subject) page opens thumbnails of all images in the selected series. In this documentation, this page is called Search Results (Images for Series).

Series Description : Colo_supine 1.0 B30f

Click View Image to view in your desktop DICOM viewer

1  View Image	2  View Image	3  View Image	4  View Image	5  View Image
6  View Image	7  View Image	8  View Image	9  View Image	10  View Image
11  View Image	12  View Image	13  View Image	14  View Image	15  View Image
16  View Image	17  View Image	18  View Image	19  View Image	20  View Image



617 images found, displaying Page 1 / 31.

Click **View Image** under any thumbnail to save the image as a file or open it in the DICOM viewer.

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Viewing Image Animation

You can launch an image animation where there are more than two images in the series using one of these methods:

- On the [Search Results \(Studies for Subject\)](#) page, you can launch an animation of thumbnails if there is more than one image in the series. Click



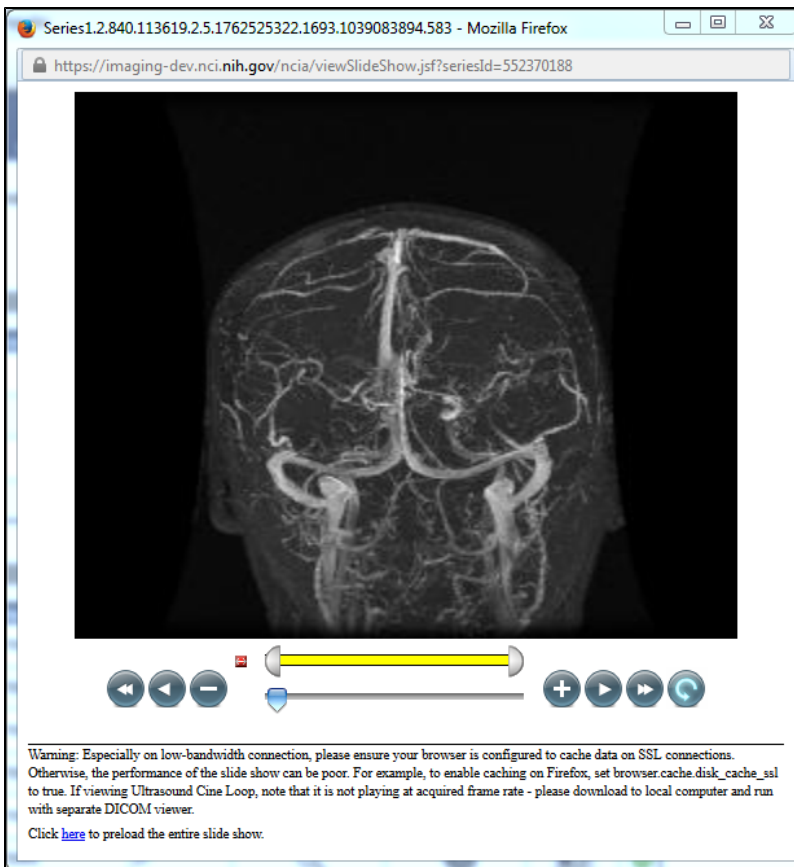
in a series record in the search results.

OR

- You can launch the animation of an image series from the data basket. In the **View** column of the data basket, click the magnifying glass symbol,













, corresponding to the series you want to view. On the View Series Images page, click the **View Series in Cine Mode** link.



When the viewer opens (figure above), the animation controls display below the image. When you use the controls, TCIA proceeds to display the images sequentially, like a movie.

The following table describes the action of each of the animation controls.

Animation Controls	Action
	Reset start and end.
	Drag ends of the yellow bar to vary the range of images playing.
	Click to return to the first image in the set.
	Click to play animation backward through the series.
	Click to stop the animation; click again to display one image at a time, moving backward through the series.
	Drag the arrow to set which frame of the movie displays. This also monitors the progress of the animation.
	Click to stop the animation; click again to display one image at a time, moving forward through the series.
	Click to play animation forward through the series.
	Click to progress to the last image in the set.
	Click to cycle the animation forward or backward. Once set, the animation continues.



Tip

If the animation is very sluggish, you may want to preload the entire animation by clicking the link at the bottom of the series animation page. Also heed the note at the bottom of the page, which reads:

Warning: Especially on low-bandwidth connections, please ensure your browser is configured to cache data on SSL connections. Otherwise, the performance of the slide show can be poor. For example, to enable caching on Firefox, set `browser.cache.disk_cache_ssl` to true. If viewing Ultrasound Cine Loop, note that it is not playing at acquired frame rate - please download to local computer and run with separate DICOM viewer.

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Obtaining DICOM Viewers

Most image data and some associated data within The Cancer Imaging Archive (TCIA) is stored in DICOM format. There are a variety of both open source and commercial DICOM tools that could be used to manipulate and view these files. While TCIA does not endorse nor recommend any particular tool, here is a list of tools that we or our partners have used in our daily work. [More information about DICOM](#) is available.

Select **Tools > List of DICOM Tools** to open a page of selected links to freeware DICOM image viewers. This list is provided for your convenience. Many other DICOM viewers are available on the internet. This is not an endorsement of the listed viewers.



Before using the viewers

The images in this image repository need to be downloaded before you can view them using the viewers.

- [ImageJ runs on Linux, Mac OS 9, Mac OS X, Windows, and the Sharp Zaurus PDA.](#)
- [FusionViewer](#) open source & multiplatform PET/CT display software package
- [OSIRIX \(MAC OSX\)](#)
- [AIM on ClearCanvas](#)
- [3D Slicer](#)
- [MATLAB dicomread function](#) and [MATLAB dicominfo function \(headers\)](#)

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Downloading TCIA Images

Unable to render {include} The included page could not be found.

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Using the TCIA Download Manager

Unable to render {include} The included page could not be found.

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Working with the Data Basket

As you search TCIA, you can add any data items to your data basket to download later. The items in your data basket remain there only for the current work session.

Adding Items to Your Basket

Unable to render {include} The included page could not be found.

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Managing the Data Basket

Unable to render {include} The included page could not be found.

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Downloading the Data Basket

Unable to render {include} The included page could not be found.

Working With Shared Lists

TCIA provides a way for you to identify and label a collection of image series for you to use or share with other TCIA users.

Creating a Shared List

You can create a shared list by clicking **Tools > Create Shared List** link or by putting a series in the data basket, as explained below.

Who can create a shared list?

Anyone can create a shared list. Once you do so, you must record the exact name of the shared list to distribute to others who may want to use the list. That is the only way they can access it.

To create a shared list

You can create a shared list from data basket or the Tools menu. Procedures for both methods follow.

Data Basket

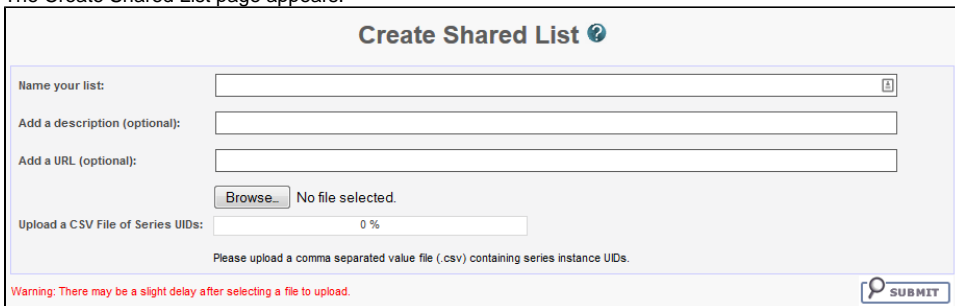
1. Add an image series that you want to include in the shared list to the data basket.
2. Click the **Create Shared List** button.
3. Do the following:
 - a. Enter a **Name** for the list (required).
 - b. Optionally, add a description and a URL. The URL links to relevant or more detailed information about the list.
 - c. Click **Browse** to upload a file in comma separated value format (.csv) that includes all of the series instance IDs you want to be in the shared list. This file should have one series instance UID per line.
4. Click **Submit**.
The image series from the uploaded file is added to the data basket.

Access to your list

TCIA warns you that not all public users will have access to your list if the list contains any non-public image series.

Menu Option:

1. Click **Tools > Create Shared List**.
The Create Shared List page appears.



2. On this page, do the following:
 - a. Enter a **Name** for the list (required).
 - b. Add **Comments** and a **Hyperlink**, where appropriate, which links to relevant or more detailed information about the list (optional).
 - c. In the **Upload File** field, enter the name of a file that includes all of the series instance IDs you want to be in the shared list. This file should have a series instance UID per line.
 - d. For your convenience, a Java tool is available to aid in generating a CSV of your series instance UIDs.
Download: [ExtractSeriesUIDs.zip](#)
Do the following to use this tool to generate the file to upload in the last field of our online Create Shared List form:
 - i. Download the zip file, then move it to a top-level directory of DICOM files you want indexed.
 - ii. Extract the zip file to the top level directory where your DICOM data resides (all sub-directories will be scanned). It should extract two things.
 - iii. Then run **ExtractSeriesUIDs.bat** which should flash a quick command line window and then automatically disappear.
A file with a name similar to **SeriesUIDs.CSV** is created as an output.
 - iv. Enter the output filename into the form.
4. Click **Submit**.
The image series from the uploaded file is added to the data basket.

Editing a Shared List

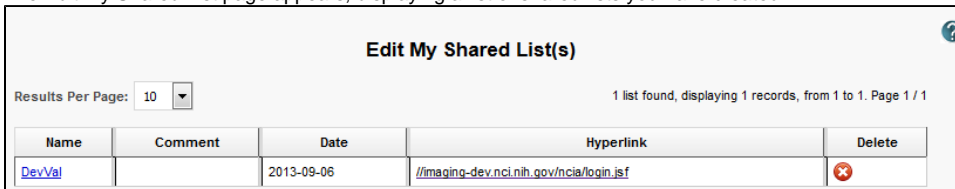
You can edit the list only by uploading a .csv file with all the series instance IDs for the list. You can only edit/delete shared lists you have created yourself.

Shared List

From the data basket, you can export image series instance IDs to a .csv file for later use in creating or editing a shared list. See [Exporting a Shared List](#) for more information.


To edit a shared list

1. Click the **Edit Shared List** link under Tools on the menu bar.
The Edit My Shared List page appears, displaying a list of shared lists you have created.

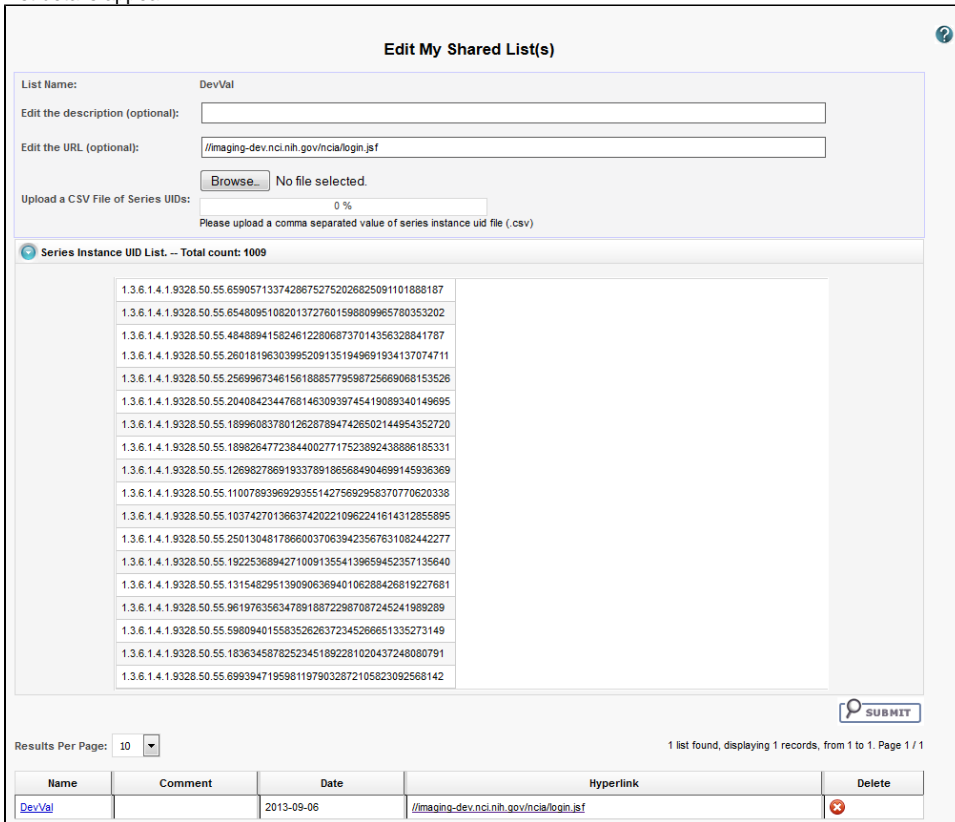


Edit My Shared List(s)

Results Per Page: 10 1 list found, displaying 1 records, from 1 to 1. Page 1 / 1

Name	Comment	Date	Hyperlink	Delete
DevVal		2013-09-06	//imaging-dev.nci.nih.gov/ncia/login.jsf	

2. Click the name of the shared list you want to edit.
List details appear.



Edit My Shared List(s)

List Name: DevVal

Edit the description (optional):

Edit the URL (optional): //imaging-dev.nci.nih.gov/ncia/login.jsf


No file selected.

Upload a CSV File of Series UIDs: 0 %
Please upload a comma separated value of series instance uid file (.csv)

Series Instance UID List. -- Total count: 1009


1.3.6.1.4.1.9328.50.55.65905713374286752752026825091101888187
1.3.6.1.4.1.9328.50.55.6548095108201372760159809965780353202
1.3.6.1.4.1.9328.50.55.48488941582461228068737014356328841787
1.3.6.1.4.1.9328.50.55.260181963039952091351949691934137074711
1.3.6.1.4.1.9328.50.55.256996734615618885779598725669068153526
1.3.6.1.4.1.9328.50.55.204084234476814630939745419089340149695
1.3.6.1.4.1.9328.50.55.189960837801262878947426502144954352720
1.3.6.1.4.1.9328.50.55.189826477238440027717523892438886185331
1.3.6.1.4.1.9328.50.55.126982786919337891865684904699145936369
1.3.6.1.4.1.9328.50.55.110078939692935514275692958370770620338
1.3.6.1.4.1.9328.50.55.103742701366374202210962241614312855895
1.3.6.1.4.1.9328.50.55.250130481786600370639423567631082442277
1.3.6.1.4.1.9328.50.55.192253689427100913554139659452357135640
1.3.6.1.4.1.9328.50.55.131548295139090636940106288426819227681
1.3.6.1.4.1.9328.50.55.96197635634789188722987087245241989289
1.3.6.1.4.1.9328.50.55.59809401558352626372345266651335273149
1.3.6.1.4.1.9328.50.55.18363458782523451892281020437248080791
1.3.6.1.4.1.9328.50.55.69939471959811979032872105823092568142

Results Per Page: 10 1 list found, displaying 1 records, from 1 to 1. Page 1 / 1

Name	Comment	Date	Hyperlink	Delete
DevVal		2013-09-06	//imaging-dev.nci.nih.gov/ncia/login.jsf	

3. In the description field, optionally enter a comment about the list or your edit.
4. In the URL field, optionally enter a web address that provides more information about the shared list.
5. Click **Browse** to locate the file you want to upload. Doing this replaces the current shared list.

To delete a shared list

1. Click **Tools > Edit Shared List**.
The Edit My Shared List page appears, displaying a list of Shared Lists you have created.
2. In the row of the shared list you want to delete, click .

Because editing a shared list is only possible by replacing it, you might consider backing up a shared list when you create it. To do so, export the shared list as a file when you create it. See [Exporting a Shared List](#).

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Searching a Shared List

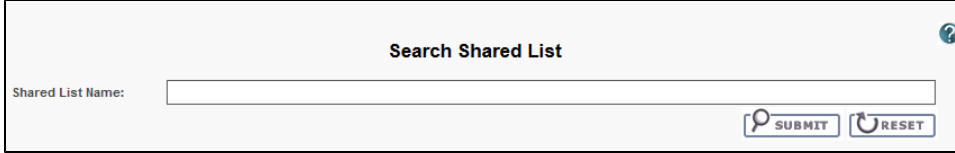
Any user can search for a shared list.

To search for a shared list



1. From <http://www.cancerimagingarchive.net/>, click
2. Click **Tools > Search Shared List**.

The Search Shared List page appears.



Search Shared List

Shared List Name:

3. Enter the name of an existing shared list. To retrieve the list, you must know the *exact name* given to the shared list.
4. Click **Submit** to launch the search or **Reset** to clear the field and start again.

If the search is successful, all image series in the shared list are added to the data basket. If the shared list includes series for which you do not have visibility rights, a message appears that informs you that the displayed shared list is not complete.

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Exporting a Shared List

Once you have created a shared list, you can export it as a .csv file.

To export a shared list

1. Above the data table, click **Shared List > Export Series ID**.
The shared list opens in the data basket.
The export begins immediately. A dialog box appears, prompting you to open (in Excel) or save the file.
2. Select to open or save the file.

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Managing a Shared List

Users with the appropriate administrative privileges can delete shared lists created by other users.

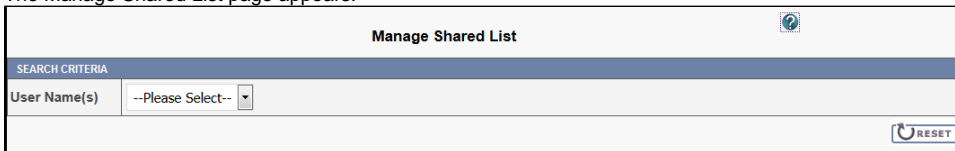


Permissions

This administrative feature is available only to logged in users who have "manage visibility" privileges, as defined in UPT.

To delete a shared list, follow these steps:

1. Click **Admin > Manage Shared List**.
The Manage Shared List page appears.

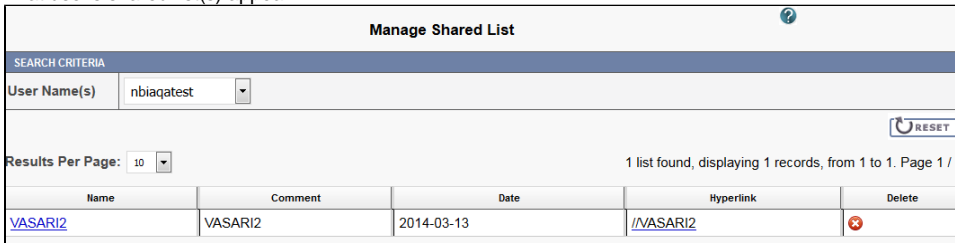


Manage Shared List

SEARCH CRITERIA

User Name(s)

2. Select a user name from the list.
That user's shared list(s) appear.




Manage Shared List

SEARCH CRITERIA

User Name(s)

Results Per Page: 1 list found, displaying 1 records, from 1 to 1. Page 1 / 1

Name	Comment	Date	Hyperlink	Delete
VASARI2	VASARI2	2014-03-13	/VASARI2	<input type="button" value="X"/>

3. Click the name link to review the shared list's details or click  to delete shared the shared list.

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