

# Managing Sample Characterizations - 2021-06-24

## Access to sample characterizations

If you have read-only permissions, see [Access the Sample Characterization Summary](#). If you are a curator with appropriate security permissions, you can create, update, and delete characterizations.

This chapter describes how to review or ascribe characterizations to samples save in caNanoLab. Topics in this chapter include:

- [Sample Characterization Overview](#)
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## Sample Characterization Overview

Sample characterization describe distinctive characteristics or essential features of the sample determined through analytical methods and records information associated with sample properties. Samples can be characterized in caNanoLab by physical or chemical characteristics or by data derived under *in vitro* and *in vivo* conditions.

### With the appropriate security permissions...

With the appropriate security permissions, you can

- Add a Physico-Chemical, In Vitro, In Vivo, Ex Vivo, or Other Ex Vv to a sample.
- Print, export, edit, copy, or delete a characterization and add a file to a characterization.

If the buttons do not display, you have read-only access to the item.

## Accessing the Sample Characterization Summary

With read-only access, you can review a summary of characterization information and annotations added to the sample.

To access characterization functions in the Navigation Tree

1. Click **Samples** and **Search Existing Samples**.
2. Fill in criteria, and click **Search**.
3. Click **Edit** in the search results.
4. The Navigation Tree appears on the left sidebar and comprises functions which you can use to add annotations to the sample.

NAVIGATION TREE	<ul style="list-style-type: none"> <li>• <b>General Info</b> appears after you click the sample name and displays the Update Sample page.</li> <li>• <b>Composition</b> defines Nanomaterial Entity, Functionalizing Entity, and Chemical Associations.</li> <li>• <b>Characterization</b> defines essential physical characteristics that identify the material and structural properties via the Protocol and Physico-Chemical, In Vivo, and In Vitro Characterization.</li> <li>• <b>Publication</b> displays articles, books chapters, reviews and reports already added to a sample.</li> <li>• <b>Synthesis</b> displays synthesis information for a sample.</li> </ul>
GENERAL INFO	
COMPOSITION	
CHARACTERIZATION	
PUBLICATION	
SYNTHESIS	

5. Click **Characterization**.

The **All** tab displays characterizations already added to the sample by category. Additional tabs show annotations added to the sample for each subcategory.

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## Submitting Characterizations

Once you access Characterizations in the Navigation Tree, you can add different types of information to the sample.

- [Adding a Physico-chemical Characterization](#)
- [Adding an In Vitro Characterization](#)
- [Adding an In Vivo Characterization](#)
- [Adding an Ex Vivo Characterization](#)
- [Adding an Other Ex Vivo](#)

If you have read-only access, you can [View a Characterizations Summary](#).



To enter an alternative to an option, select **other** if available and enter a value. The value is added to the list of options.

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## Exporting Sample Information to JSON or XML

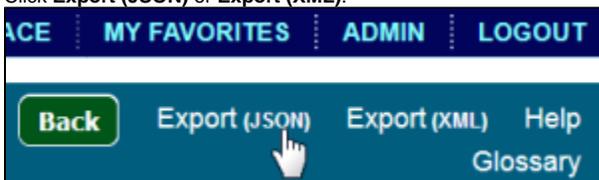
You can export a sample's general information, composition, characterization, publication, and synthesis information to JSON or XML.

To export sample information from the Navigation Tree

1. From the **Navigation Tree**, select **General Info**.

NAVIGATION TREE
GENERAL INFO
COMPOSITION
CHARACTERIZATION
PUBLICATION
SYNTHESIS

- Click **Export (JSON)** or **Export (XML)**.



- The system prompts you to download the information and specify a download location.

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## Adding a Physico-Chemical Characterization

To add a physico-chemical characterization

- Access a [sample and characterization](#).
- Click the **All** tab or the **Physico-Chemical Characterizations** tab and click **Add** next to Physico-chemical Characterization.
- Both tabs provide customizations based on your **Characterization Type\*** selection.
- Follow these steps to fill in the characterization. Links are provided for additional details.

Section	What to Do
<a href="#">Physico-Chemical Characterization</a>	Fill in the general information about the characterization.  <b>Note:</b> When you are defining the characterization, to select an existing, non-standard Assay Type, select the Characterization Name, other_pc
<a href="#">Properties</a>	If you select one of the following characterization types, you need to fill in additional properties. <ul style="list-style-type: none"> <li>Physical State</li> <li>Shape</li> <li>Solubility</li> <li>Surface</li> </ul>
<a href="#">Design and Methods</a>	Complete the fields describing techniques and instruments used to derive the data.
<a href="#">Finding</a>	Add data findings and supporting documentation relating to the sample. Import as many .csv files as you wish or add derived data manually.  Click <b>Add</b> to expand the section, and add data findings and <a href="#">add supporting documents</a> to the characterization.
<a href="#">Analysis and Conclusion</a>	Enter any relevant analyses and conclusions reached by the data.
<a href="#">Copy to Other Samples with the Same Primary Organization</a>	Select samples in the list to which you want this physico-chemical data transferred. This option copies files and data to one or more selected samples "owned" by the same point of contact.

When you are finished, click **Submit** to save the data to the sample.

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## Defining Physico-Chemical Characterization Properties

If you selected one of the Characterization Names listed in the following table, the **Properties** section opens, and you must fill in additional information.

Characterization Name	Properties to Complete
Physical State	Select the <b>Type</b> of <a href="#">physical state</a> .  Unknown macro: 'hide'

Shape	 <ol style="list-style-type: none"> <li>1. Select the <b>Type</b> of shape.</li> <li>2. Enter the shape <b>Aspect Ratio</b>.</li> <li>3. Enter the <b>Minimum</b> and <b>Maximum Dimensions</b> of the sample, and the units of measurement.</li> </ol>
Solubility	<ol style="list-style-type: none"> <li>1. Select from the options or enter the name of the <b>Solvent</b>.</li> <li>2. Enter appropriate values for the <b>Critical Concentration</b>, then select the appropriate units for those values.</li> <li>3. Specify Yes or No to indicate whether the solvent <b>Is Soluble?</b></li> </ol>
Surface	Specify Yes or No to indicate whether the surface <b>Is Hydrophobic?</b>

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## Adding an In Vitro Characterization

In vitro characterization allows you to add characterizations for the nanomaterial component of the sample derived from analytical techniques performed under *in vitro* conditions.

To add an *in vitro* characterization

1. [Access a sample and characterization.](#)
2. Click the **All** tab or the **In Vitro Characterizations** tab and click **Add** next to In Vitro Characterization.
3. Both tabs provide customizations based on your **Characterization Type\*** selection.
4. Follow these steps to fill in the characterization. Links are provided for additional details.

Section	What to Do
<a href="#">In Vitro Characterization</a>	Fill in the general information about the characterization.  <b>Note:</b> When you are defining the characterization, to select an existing, non-standard Assay Type, select the Characterization Name, other_vt.
<a href="#">Properties</a>	If you select one of the following characterization names, you need to fill in additional properties. <ul style="list-style-type: none"> <li>• Cytotoxicity</li> <li>• Enzyme Induction</li> <li>• Transfection</li> </ul>
<a href="#">Design and Methods</a>	Complete the fields describing techniques and instruments used to derive the data.
<a href="#">Finding</a>	Add data findings and supporting documentation relating to the sample. Import as many .csv files as you wish or add derived data manually.  Click <b>Add</b> to expand the section, and add data findings and <a href="#">add supporting documents</a> to the characterization.
Analysis and Conclusion	Enter any relevant analyses and conclusions reached by the data.
<a href="#">Copy to Other Samples with the Same Primary Organization</a>	Select samples in the list to which you want this physico-chemical data transferred. This option copies files and data to one or more selected samples "owned" by the same point of contact.

When you are finished, click **Submit** to save the data to the sample.

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## Defining In Vitro Characterization Properties

If you selected one of the Characterization Names listed in the following table, the **Properties** section opens, and you must fill in additional information.

Characterization Name	Properties to Complete
Cytotoxicity	Enter the appropriate Cell Line.
Enzyme Induction	Enter the Enzyme Name of your choice.
Targeting	Enter the appropriate Cell Line.
Transfection	Enter the appropriate Cell Line.

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## Adding an In Vivo Characterization

In vivo characterization allows you to add characterizations for the nanomaterial component of the sample that were derived from analytical techniques performed under *in vivo* conditions.

To add an in vivo characterization

1. [Access a sample and characterization.](#)
2. Click the **All** tab or the **In Vivo Characterizations** tab and click **Add** next to In Vivo Characterization.
3. Both tabs provide customizations based on your **Characterization Type\*** selection.

Follow these steps to fill in the characterization. Links are provided for additional details.

Section	What to Do
<a href="#">In Vivo Characterization</a>	Fill in the general information about the characterization.  <b>Note:</b> When you are defining the characterization, to select an existing, non-standard Assay Type, select the Characterization Name, <b>other_vv</b> .
<a href="#">Design and Methods</a>	Complete the fields describing techniques and instruments used to derive the data.
<a href="#">Finding</a>	Add data findings and supporting documentation relating to the sample. Import as many .csv files as you wish or add derived data manually.  Click <b>Add</b> to expand the section, and add data findings and <a href="#">add supporting documents</a> to the characterization.
Analysis and Conclusion	Enter any relevant analyses and conclusions reached by the data.
<a href="#">Copy to Other Samples with the Same Primary Organization</a>	Select samples in the list to which you want this physico-chemical data transferred. This option copies files and data to one or more selected samples "owned" by the same point of contact.

4. When you are finished, click **Submit** to save the data to the sample.

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## Adding an Ex Vivo Characterization

To add an ex vivo characterization

1. [Access a sample and characterization.](#)
2. Click the **All** tab or the **Ex Vivo Characterizations** tab and click **Add** next to Ex Vivo Characterization.
3. Both tabs provide customizations based on your **Characterization Type\*** selection.

Follow these steps to fill in the characterization. Links are provided for additional details.

Section	What to Do
<a href="#">Ex Vivo Characterization</a>	Fill in the general information about the characterization.  <b>Note:</b> When you are defining the characterization, to select an existing, non-standard Assay Type, select the Characterization Name, <b>other_ex_vv</b>
<a href="#">Design and Methods</a>	Complete the fields describing techniques and instruments used to derive the data.
<a href="#">Finding</a>	Add data findings and supporting documentation relating to the sample. Import as many .csv files as you wish or add derived data manually.  Click <b>Add</b> to expand the section, and add data findings and <a href="#">add supporting documents</a> to the characterization.
Analysis and Conclusion	Enter any relevant analyses and conclusions reached by the data.
<a href="#">Copy to Other Samples with the Same Primary Organization</a>	Select samples in the list to which you want this physico-chemical data transferred. This option copies files and data to one or more selected samples "owned" by the same point of contact.

4. When you are finished, click **Submit** to save the data to the sample.

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## Adding an Other Ex Vivo Characterization

To add an other ex vivo characterization

1. [Access a sample and characterization.](#)
2. Click the **All** tab or the **Other Ex Vivo Characterizations** tab and click **Add** next to Ex Vivo Characterization.
3. Both tabs provide customizations based on your **Characterization Type\*** selection.

Follow these steps to fill in the characterization. Links are provided for additional details.

Section	What to Do
<a href="#">Other Ex Vivo Characterization</a>	Fill in the general information about the characterization.
<a href="#">Design and Methods</a>	Complete the fields describing techniques and instruments used to derive the data.
<a href="#">Finding</a>	<p>Add data findings and supporting documentation relating to the sample. Import as many .csv files as you wish or add derived data manually.</p> <p>Click <b>Add</b> to expand the section, and add data findings and <a href="#">add supporting documents</a> to the characterization.</p>
Analysis and Conclusion	Enter any relevant analyses and conclusions reached by the data.
<a href="#">Copy to Other Samples with the Same Primary Organization</a>	Select samples in the list to which you want this physico-chemical data transferred. This option copies files and data to one or more selected samples "owned" by the same point of contact.

4. When you are finished, click **Submit** to save the data to the sample.

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## Adding Information to a Characterization

The following procedures apply to any Characterization Type when you are adding or editing a characterization.

### Defining the Characterization

When you are adding a characterization, fill in the following characterization information.

Complete	How to
Characterization Type*	This is already filled in with <b>Physico-Chemical</b> , <b>In Vivo, Ex Vivo</b> , or <b>Other Ex Vv</b> (required) when you click the tab of the same name or add one from the All tab.
Characterization Name*	<p>Select the name of the characterization (required).</p> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p><b>i</b> <b>Character Type Notes</b></p> <ul style="list-style-type: none"> <li>• <b>Physico-Chemical:</b> If you select Cytotoxicity, Enzyme Reduction, Target, or Transfection, you have to complete <a href="#">additional properties</a>. To create an existing, non-standard Assay Type, select <b>other_pc</b>.</li> <li>• <b>In Vitro:</b> If you select Cytotoxicity, Enzyme Reduction, Target, or Transfection, you have to complete <a href="#">additional properties</a>. To select an existing, non-standard Assay Type, select <b>other_vt</b>.</li> <li>• <b>In Vivo:</b> To select an existing, non-standard Assay Type, select <b>other_vv</b>.</li> <li>• <b>Ex Vivo:</b> To select an existing, non-standard Assay Type, select <b>other_ex_vv</b>.</li> </ul> </div> <p>To create a new, non-standard Assay Type</p> <ol style="list-style-type: none"> <li>1. Select <b>other</b>.</li> <li>2. Enter a <b>New Characterization Name</b> and click <b>Add</b>, and the new characterization is added the Characterization Name list.</li> </ol> <div style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p><b>Characterization Name *</b></p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">other</div> <div style="border: 1px solid #ccc; padding: 5px;"> <p style="margin: 0;"><b>New Characterization Name:</b></p> <input style="width: 100%; margin: 5px 0;" type="text" value="NewExampleName"/> </div> <div style="margin-left: 10px;"> <input type="button" value="Add"/> <input type="button" value="Cancel"/> </div> </div> </div>

Assay Type	Select an assay type from the list that populates automatically based on the Characterization Name.  To add an Assay Type  <b>1. Select other.</b> <b>2. Enter a New Assay Type</b> and click <b>Add</b> , and the new Assay Type is added to the list.
Protocol Name – Version	If available, select a protocol from which the data is derived. If displayed, click the hyperlink to the protocol text file to open or save the file.
Characterization Source	Select or enter the source from which the characterization data is derived, such as a vendor or a laboratory (NCL).
Characterization Date	Select or enter the date the characterization was made (dd/mm/yyyy).

## Defining Characterization Design and Methods

When you are adding a characterization, fill in the following design, methods, and techniques used.

Design and Methods Field	Description
Design and Methods Description	Enter a description for the characterization design and methods.  <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>i</b> <b>Adding extra lines</b></p> <p>If you include an extra line between text in the Characterizations free text, Design and Methods Description, the line separation is preserved when you save or update the characterization.</p> </div>
Technique and Instrument	Click <b>Add</b> to expand the page where you can select and enter information regarding the technique and instrument used to derive the sample.
Technique*	Select the technique (required).
Abbreviation	When you select a technique, <b>Abbreviation</b> populates automatically if an abbreviation is known. If not, enter an abbreviation.
Description	Enter a description of the technique and instrument.
Instrument	Click <b>Add</b> to expand the Instruments panel. Enter or select identifying information about the instrument used to obtain data. <ul style="list-style-type: none"> <li>• Select the instrument <b>Manufacturer</b>.</li> <li>• Enter the instrument <b>Model Name</b>.</li> <li>• Enter the model <b>Type</b>.</li> </ul>

When you are finished, click **Save** or **Cancel** to close the section without saving.

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## Adding Data Findings to a Characterization

To add findings to a characterization, you can add data directly to Data and Conditions by creating columns and adding data manually or you can import as many .csv files as needed. Information can include laboratory conditions, pH, or temperature. You can add as many files as you wish.

1. Add data values to Data and Conditions.
  - a. To import a file of data values
    - i. Save the spreadsheet of data values to a csv (comma-separated value) file.
    - ii. Click **Import csv** and select and follow the prompts to add the data file to the Findings Info.



- iii. The columns and data are added to Data and Conditions.
  - b. To add the data values manually
    - i. Specify the number of **columns** and **rows** for the matrix, and click **Update**.

Finding Info

Data and Conditions

2 columns 3 rows **Update**

- ii. Add the data values to the rows.

**i** Whether you imported or added information manually, you can preface each data value with one of the following: Maintain the default, equal to (=), or select greater than (>), less than (<), or infinity (approximate).

- 2. To define a column, click an underlined column heading.

The Column Definition panel displays.

- 3. Select a **Column Type**, Datum or Condition.
- 4. Select a **Column Name** or select **other** and add a new one.

**i** **Column Notes**

You can add up to three cell viability Column Names, including **cell viability**, **cell viability B**, and **cell viability C**. You can further identify the column with the Column Value Type.

- a. For Column Type, **Datum**, the following characterization(s) display customized **Column Name** options.

Characterization Type	Column Type and Column Name Option(s)
Physico-Chemical	<ul style="list-style-type: none"><li>• <b>Molecular</b> – Molecular Weight</li><li>• <b>Purity</b> – % purity for sample</li><li>• <b>Relaxivity</b> – R1, R2, T1, T2</li><li>• <b>Size</b> – PD1, Peak N , RMS size, Z Average</li><li>• <b>Surface</b> – charge, zeta potential</li></ul>
In Vitro	<b>Enzyme Induction</b> – % of Control
In Vivo	Click <b>Other</b> to name the column yourself.

- b. For Column Type, **Condition**, all characterizations provide the **Column Name** options in the left column of the following table. The Column Name autopopulates the **Condition Property** options in the right column.

Column Type, Condition Autopopulates Column Name	Column Name Autopopulates Condition Property
Centrifugation	N/A
Culture Media	media type, serum percentage
Electromagnetic Radiation	bandwidth, frequency, time, wavelength
Freeze Thaw	N/A
Long Term Storage	lyophilized, time
Lyophilization	time
pH	N/A
Sample concentration	N/A
Short Term Storage	lyophilized, time
Solvent Media	ion concentration, ionic strength, molecular formula, osmolality, serum percentage, with serum
Sonication	number of pulses, pulse duration
Temperature	N/A

5. To further identify a column, select a **Column Value Type**.

**i** Once the column information is saved, the Column Type is shown in parentheses after the Column Name, such as **cell viability (mean)**.

6. Select a **Column Value Unit**, or select **other** and add one.  
7. If you want the same value to fill all rows in a column, add a **Constant Value**.

**i** **For Column Value Type, boolean**

For Column Value Type, **boolean**, enter a Constant Value of 1 for true and 0 for false.

8. Click **Save**, and the column(s) are updated.

**i** If needed, click **Set Column Order** to change the order of the column headings in the matrix.

9. Click **Save** in the Finding section.

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## Adding Supporting Documents to a Characterization

To add results in the form of supporting documents, such as a graphic, spreadsheet or images to a characterization

 You can add as many files as you wish.

1. In the Finding section of the characterization, next to **Files**, click **Add**.
2. Upload, browse, and select the file or enter the file's URL where the document is located.
3. Complete the following.
  - a. Select the **File Type** (required), Document, Graph, Image, Movie, or Spreadsheet.
  - b. Enter the **File Title** (required).
  - c. Specify **Keywords** to associate with the file
  - d. Enter a **Description** of additional information of the file.
4. Click **Submit** to add the file(s) to the sample.

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## Copying to Samples in the Same Primary Organization

The composition files and/or derived data for a sample can be copied to other samples from the same primary point of contact.

1. From the **All** tab's characterizations summary, click **Edit** at the right of a characterization section.
2. The Characterization opens and at the bottom of the page, in the **Copy to other samples...** section, select one or more samples with the same primary point of contact.
3. Click **Also copy finding data and conditions?**
4. Click **Submit** to copy the characterization.

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## Additional Characterization Tasks

The following table lists tasks that require Curator privileges.

 If a button does not display, you have read-only access to the data.

Task	How to
<b>Printing Characterization(s)</b>	To print the characterization(s), from the <b>All</b> tab characterization summary, click <b>Print</b> at the top right of the page.
<b>Exporting Characterization (s) to a Spreadsheet</b>	To export the characterization(s) to a spreadsheet, from the <b>All</b> tab characterization summary, click <b>Export</b> at the top right of the page.   To export all sample information to JSON or XML, see <a href="#">Exporting Sample Information to JSON or XML</a>
<b>Editing a Characterization</b>	<ol style="list-style-type: none"><li>1. From the <b>All</b> tab's characterizations summary, click <b>Edit</b> at the right of the characterization section you want to change.</li><li>2. The Characterization opens and you can edit it as needed.</li></ol>

## Deleting a Characterization



### Deleting a characterization

This deletes a characterization(s) from the selected sample. If the characterization(s) was copied to other samples, the characterization is not removed from those samples.

To delete a characterization for a selected sample

1. From the **All** tab's characterizations summary, click **Edit** at the right of a characterization section.
2. The Characterization opens, and click **Delete**.
3. The deleted characterization is placed in the sample archive for historical purposes.

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