Workbook

LDMS Training Workbook

LDMS (Web)

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Specimen Management

Review LDMS User Manual section **Specimen Management-- Using the Specimen Management page**

Review LDMS User Manual section **Specimen Management-- Quick add**

Exercise 1: ACTG/IMPAACT single tube entry

Review LDMS User Manual section **Specimen management -- Quick add**

A heparin specimen is drawn from the participant at 08:15 today. The specimen is to be processed into two aliquots of single-spun plasma and one aliquot of viable PBMCs.

1. From the LDMS Menu Bar select **Specimen Management** then **Quick Add**
2. In **Participant Information**, enter the following information

Project	ACTG/IMPAACT
PID	0789789I

3. In **Enrollment Information**

Protocol	A5221

4. In **Visit Information**

SID	NOSID
Clinic	701
Collection Date	Current Date
Visit Value	0
Visit Units	Scr

5. In **Primary Information** click **Add New**.

Primary Type	BLD
Additive Type	HEP
Collection Time	08:15
Received Date	Current Date
Received Time	09:00
Volume	6
Volume Unit	ML

6. In **Aliquots** for Primary #1 click **Add New**.

Total Aliquots	2
Derivative Type	PL1
Sub A/D Type	N/A
Volume	1
Volume Units	ML

7. In **Aliquots** for Primary #1 click **Add New**.

Total Aliquots	1
Derivative Type	CEL
Sub A/D Type	DMS
Volume	3
Volume Units	CEL

8. Click the **Edit** button next to a **Primary** specimen and review the options available.
9. Click the **Edit** button next to an **Aliquot** specimen and review the options available.
10. Click the **Add** button at the bottom of the page.

Exercise 2: Applying Filters

Filters are used to limit the information that is displayed in the working area on the page. For example, on the Specimen Management page, if a filter is applied with the value FRONTIER to the Project field, only participants enrolled in the FRONTIER project will be displayed. The filters that are available will vary, depending on the current page. To remove a filter after it has been applied, click on it or click Remove all filters.

Practice applying and removing filters to see how they limit the specimens displayed in the on the Specimen Management page.

Question 1: What is the broadest filter a user can apply? _______________

Question 2: What is the most restrictive? _______________

Exercise 3: Printing Labels

Review LDMS User Manual section **Labels--Printing labels anywhere**

Labels are available in every module of the LDMS and can be generated after accessioning specimens in the Quick Add page. The **Print Labels** menu is standard throughout the application.

1. Using the filters, **locate** a record entered during this training
2. In the **Visit** grid **Edit** button drop-down arrow, click **Print Labels**
3. In the **Format** menu, select label with barcode
4. Select **Label Size**: Barcode Label 19
5. (If using roll labels) **Skip** box will always equal zero
6. (If using laser labels) Enter the number of label spaces to skip in the **Skip** box. You may need to do this if using a sheet of labels that you have previously used.
7. Click **Generate Labels**.

After clicking **Generate Labels**, a PDF file that contains the labels is generated and downloaded into the folder set by the internet browser. Instructions to set the default option in this menu are covered in the LDMS User Manual section **Labels-- Setting the default label format for a project**

Exercise 4: Adding post-processing information

Review LDMS User Manual section **Specimen Management—Primary Specimens--Modifying a primary specimen** and **Specimen Management—Aliquot Specimens--Modifying an aliquot specimen**

1. Stay on the specimen page
2. Click **Edit** to complete the following information for each **Primary**:
    - **Processing Tech Initials** (cascade to all aliquots of this primary)
    - **Processing Date** and **Time** (cascade to all aliquots of this primary)
    - **Total Cell Count** (If applicable)
3. Click **Save**.
4. Click the **Edit** button next to the Aliquot.
   Multiple aliquots can be edited using the control key to highlight multiple samples.
   Enter the following:
    - **Frozen Date/Time** (appropriate for each sample type)

    Adjust the following, as needed:

    - Condition Code (such as missing aliquot and QNS)
    - Comments
    - Aliquot volume
5. Click **Save**
   For HPTN: The lab can set aliquots collected in addition to the amount prescribed by the protocol by checking the '**Collected Outside Protocol Requirements**' checkbox

Exercise 5: ACTG/IMPAACT adding a co-enrollment

In this example we will add another enrollment to the primary specimen logged in Exercise 1 and assign one of the plasma aliquots to this study.

1. Locate the Primary specimen logged in Exercise #1
2. On the primary specimen's **Edit** menu, click **Manage Enrollments**.
3. Click **Add Enrollment**.
4. Complete the **Selected Enrollment** form below the grid and click **Update**.
5. **Scroll** down, click **Save**.
6. For one of the PL1 aliquots, click **Edit**.
7. Change the ownership of the aliquot by using the **Enrollment** list. Select the new protocol and click **Save**.

Exercise 6: ACTG/IMPAACT multiple tube entry with Quick Add template option

Review LDMS User Manual section **Specimen management -- Quick add**

Specimens were collected from a participant today at 07:25 for a 24 week visit on A5322. The Laboratory Technologist and Laboratory Data Manager on this study have created templates to assist in specimen entry. The template is based on the LPC and will make entries for all expected specimens on a particular visit or event. In this example the preload will be selected from a menu in Quick Add.

1. From the LDMS Menu Bar select Specimen Management then **Quick Add**.
2. Under Template Filters, select the following:

Project:	ACTG/IMPAACT
ID2:	A5322

3. From the **Template** list, select A5322 - V2 - LOA2 - WEEK 24
4. Read the Note. These are provided to Frontier Science from the laboratory technologist on the study.
5. In **Participant Information**, enter the following information.

PID:	0111111C

6. In **Visit Information**, enter the following information:

SID:	NOSID
Clinic:	201

Collection Date: Current Date

7. When prompted to cascade the Collection Date to the Receive Date and Frozen Date, click **Yes**.
8. In Primary Information **Add**.

   Collection Time: 07:25 Notes: Use Copy and Paste (Crtl + C or V) to enter the time in the other primaries
   Received Time: 09:00 see notes above

9. Go to **Primary #1** and change the **Additive Type**.

   Look at the **Template Comments** at the top of the web page and the **Derivative Type** in the **Aliquot Grid**.

10. Click the **Add** button.

Exercise 7: ACTG/IMPAACT condition codes

During collection of the samples, the participant's vein collapsed while drawing Primary #1 and only 15 mL of this primary was collected. Due to the short volume only 8 of the 12 expected 0.5 mL plasma aliquots were collected. The participant refused a re-stick therefore Primary #2 was not collected. Work through the Condition Code Training Tools reference guide to assign all appropriate condition codes.

Assign all appropriate condition codes to the specimens, using the **LDMS ACTG IMPAACT Condition code training tools**

1. On the Specimen Management page, apply filters to locate the specimens accessioned in the previous exercise.
2. Change the condition code for Primary # 1 to the appropriate code, as determined by referencing the LDMS ACTG IMPAACT Condition code training tools.
   - Click the **Edit** button on the first primary
   - Change the condition code for Primary # 1 to the appropriate code, as determined by referencing the LDMS ACTG IMPAACT Condition code training tools.
   - New Primary Condition Code = ___________
   - Should the aliquot condition code be the same as the primary condition code?
   - Click **Save**
3. Locate the aliquots associated with Primary # 1 and assign the appropriate condition code to the missing aliquots.

- New Aliquot Condition Code = __________

Note: *Multiple aliquots can be edited by selecting them in the grid before opening the edit button*

- Click **Save**

4. Locate Primary #2, adjust the Primary & Aliquot condition codes as appropriate
   - New Primary Condition Code = __________
   - New Aliquot Condition Code = __________
   - Enter the comment “Participant refused draw”
   - Click **Save**

Discussion: If this was known at the time of accession, can the user change the information in the Quick-Add screen?

Exercise 8: ACTG/IMPAACT Reagent logging

Review LDMS User Manual section **Administration--Reagent Logging**

1. From the LDMS menu bar, hover over **Administration** and select **Reagent Logging**
2. Click the **Add Reagent** button at the top-right of the grid
3. A new line appears in the grid. Complete the following fields:

Reagent Name:	DMS
Lot Number:	123456
Expiration date:	Today's Date + 1 year (**TIP**: Change the year at the bottom of the Calendar)
Manufacturer:	Frontier Labs
Start Date:	Today
End Date:	[Leave blank]

4. Click **Save.**
5. Return to the **Specimen Management**.
6. Use the filters to find the PBMC specimen logged in today.
   - Discuss what filters to apply
7. Click the **Edit** button for one of the PBMC aliquots

8. **Select** the new lot number for the **Sub/Add Deriv**.
9. Click **Save**.

Exercise 9: HPTN single tube entry

Review LDMS User Manual section **Specimen management -- Quick add**

A fasting heparin specimen was drawn from a participant at 13:30. The specimen was processed into one aliquot of single-spun plasma and one aliquot of non-viable cells.

1. From the LDMS Menu Bar select Specimen Management then **Quick Add**.
2. In **Participant Information**:

   Project: HPTN

   When the load the default visit values message appears, click **Yes**.

   PID: 999515570
3. In **Enrollment Information**:

   Protocol: 052.0
4. In **Visit Information**

   Collection Date: Current Date

   Visit Value: 1
5. In **Primary** Information

   Click **Add** once

   Additive Type: HEP

   Collection Time: 13:30

   Received Time: 14:30

   Volume: 7.5
6. In **Aliquots** for **Primary #1**

   Click **Add** twice
7. First derivative

   Total Aliquots: 2

   Derivative Type: PL1

   Volume: 1
8. Second derivative

   Total Aliquots: 1

   Derivative Type: CEL

   Sub A/D Type DMS

Volume: 3

Volume Unit: CEL

9. Click **Add** at the bottom of the screen
10. Proceed to Exercises 2, 3, and 4

Exercise 10: HPTN double tube entry

Review LDMS User Manual section **Specimen management -- Quick add**

An EDTA blood specimen was drawn from the participant at 07:30 today. The specimen is to be processed into two aliquots of viable PBMCs and two aliquots of double-spun plasma. In addition, a urine specimen was obtained from the participant at 07:45.

1. From the LDMS Menu Bar select **Specimen Management** then **Quick Add**
2. In **Participant Information**

   Project: HPTN

   Click **Yes** to load the default visit values

   PID: 999515570
3. In **Enrollment Information**

   Protocol: 061.0
4. In **Visit Information**

   Collection Date: Current Date

   Visit Value: 1
5. In **Primary Information**

   Click **Add** twice
6. In Primary #1

   Additive Type: EDT

   Collection Time: 07:30

   Received Time: 12:30

   Volume: 10
7. In Aliquots for Primary #1

   Click **Add** twice
8. First derivative

   Total Aliquots: 2

   Derivative Type: PL2

Volume: 1

9. Second derivative

Total Aliquots: 2
Derivative Type: CEL
Sub A/D: DMS
Volume: 1
Volume Unit: CEL
Click **Edit** and add required processing information

10. In Primary #2

Primary: URN
Additive Type: NON
Collection Time: 07:45
Received Time: 12:30
Volume: 10

11. In Aliquots for Primary #2

Click **Add** once

12. First derivative

Total Aliquots: 1
Derivative Type: URN
Volume: 10

13. Click **Add** at the bottom of the screen
14. Proceed to Exercises 2, 3, and 4

Exercise 11: VTN single tube entry

Review LDMS User Manual section **Specimen management -- Quick add**

An SST blood sample was collected from a participant this morning and it was received in your lab for processing at 10:00. The sample is to be processed into four aliquots of serum.

1. From the LDMS Menu Bar select **Specimen Management** then **Quick Add**
2. In **Participant Information**

Project: VTN
Click **Yes** to load the default visit values
PID: 999561232
Click **Yes** to load the default visit values; Clinic code will populate

3. In **Enrollment Information**

   Protocol: 097.0

4. In **Visit Information**

   Collection Date: Current Date

   Visit Value: 1

5. In **Primary Information**

   Click **Add** once

   Additive Type: SST

   Collection Time: 08:30

   Received Time: 10:00

   Volume: 10

6. In Aliquots for Primary #1

   Click **Add** once

7. First derivative

   Total Aliquots: 4

   Derivative Type: SER

   Volume: 1

8. Click **Add** at the bottom of the screen
9. Proceed to Exercises 2, 3, and 4

Exercise 12: VTN double tube entry

Review LDMS User Manual section **Specimen management -- Quick add**

An ACD blood specimen was drawn from the participant today. The specimen was processed into two aliquots of double-spun plasma and one aliquot of viable PBMCs. A cervical specimen was also obtained from the participant today. All samples arrived in your laboratory for processing at 11:00.

1. From the LDMS Menu Bar select **Specimen Management** then **Quick Add**
2. In **Participant Information**

   Project: VTN

   Click **Yes** to load the default visit values

   PID: 999561232

   Click **Yes** to load the default visit values; Clinic code will populate

3. In **Enrollment Information**

Protocol: 097.0

4. In **Visit Information**

Collection Date: Current Date

Visit Value: 1

5. In Primary Information

Click **Add** twice

6. In Primary #1

Additive Type: EDT

Collection Time: 09:30

Received Time: 11:00

Volume: 10

7. In Aliquots for Primary #1

Click **Add** twice

8. First derivative

Total Aliquots: 2

Derivative Type: PL2

Volume: 1

9. Second derivative

Total Aliquots: 1

Derivative Type: CEL

Sub A/D: DMS

Volume: 5

Volume Unit: CEL

Click **Edit** and add required processing information

10. In Primary #2

Primary: CER

Additive Type: NON

Collection Time: 09:30

Received Time: 11:30

Volume: 1

Volume Unit: EA

11. In Aliquots for Primary #2

Click **Add** once

12. First derivative

Total Aliquots: 1
Derivative Type: SPG
Volume: 1
Volume Unit: EA

13. Click **Add** at the bottom of the screen
14. Proceed to Exercises 2, 3, and 4

Exercise 13: PHACS entry with template

Review LDMS User Manual section **Specimen management -- Quick add**

An infant was delivered today and is going to be enrolled on the PH100 protocol. The samples were collected at 12:30 and sent to the laboratory at 13:15. The meconium sample was not collected at this time but will be sent later. The Laboratory Technologist and Laboratory Data Manager on this study have created templates to assist in specimen entry. The template is based on the LPC and will make entries for all expected specimens on a particular visit or event. In this example the preload will be selected from a menu in Quick Add.

1. From the LDMS Menu Bar select Specimen Management then **Quick Add**.
2. Under Template Filters, select the following:

   Project: PHACS
   ID2: PH100

3. From the **Template** list, select PH100 CHILD BIRTH/ENTRY VISIT
   Read the Note. These are provided to Frontier Science from the laboratory technologist on the study.
4. In **Participant Information**

   PID: 0333333I
   Click **Yes** to load the default visit values; Clinic code will populate

5. In Visit Information
   Collection Date: Current Date
6. When prompted to cascade the **Collection Date** to the **Receive Date** and **Frozen Date**, click **Yes**.
7. In Primary Information, enter the following fields:
   Collection Time: 12:30
   Note: Use Copy and Paste (Crtl + C or V) to enter the time in the other primaries
   Received Time: 13:15 see note above

8. Go to **Primary #1, #2, and #4** and change the **TBD** codes per the instructions in the comment. Refer to the aliquot grid to confirm which primary you are editing. For example in **Primary #1** the aliquots are **SER** (serum) so the **Additive** needs to be changed to **NON** or **SST** per the instructions in the comment.
9. The meconium (**MEC**) was not collected at this time. Mark both the **Primary** (#4) and **Aliquot** to **SNC** (Sample Not Collected).
10. Click **Add** at the bottom of the screen
11. Proceed to Exercises 2, 3, and 4

Exercise 14: PHACS manual entry

Review LDMS User Manual section **Specimen management -- Quick add**

The meconium specimen was sent to the lab the day after delivery. This will be manually entered into the LDMS. The information used in this exercise is found in the study's LPC.

1. From the LDMS Menu Bar select **Specimen Management** then **Quick Add**
2. In **Participant Information**

   Project: PHACS

   Click **Yes** to load the default visit values

   PID: 0333333I

   Click **Yes** to load the default visit values; Clinic code will populate

3. In **Enrollment Information**

   Protocol: PH100

4. In **Visit Information**

   Clinic: 3 NOTE: PHACS uses clinic numbers 1–24 only

   Collection Date: Current Date

   Visit Value: 0

   Visit Units: Ent

5. In Primary Information

   Click **Add** one

6. In Primary #1

   Primary Type MEC

   Additive Type: NON

   Collection Time: 07:30

   Received Time: 09:45

   Volume: 1

Volume Unit: EA

7. In Aliquots for Primary #1

   Click **Add** once

8. First derivative

   Total Aliquots: 1
   Derivative Type: MEC
   Volume: 1
   Volume Unit: EA

9. Click **Add** at the bottom of the screen
10. Proceed to Exercises 2, 3, and 4

Exercise 15: IQA specimen entry

Review LDMS User Manual section **Specimen management -- Quick add**

1. From the LDMS Menu Bar select Specimen Management then **Quick Add**.
2. In **Participant Information**:

   Project: IQA
   Donor Number (ID1): 17023

3. In **Visit Information**

   Collection Date: Current Date

4. In **Primary** Information

   Click **Add** once
   Additive Type: ACD, EDT or HEP
   Collection Time: 13:30
   Received Time: 14:30
   Volume: 20
   Volume Unit: ML

5. In **Aliquots** for **Primary #1**

   Click **Add** once

6. First derivative

   Total Aliquots: 4
   Derivative Type: CEL
   Volume: 5
   Volume Unit: CEL

7. If available, click **Edit** and add required processing information
8. Click **Add** at the bottom of the screen
9. Return to **Specimen Management**, set filters to display these specimens and print labels
10. If the processing information was not added during Quick Add:
    a) Click Edit in the primary grid and enter the processing tech initials, date and time
    b) Highlight all four aliquots, click Edit, and enter frozen date and time
11. For the two aliquots to be sent to IQA for review
12. In the edit button drop-down arrow, Click **Cryopreservation**
13. Click **Results Obtained** and the fields will open up for data entry

Labels

Use the Print Labels page to re-print many labels across several specimens and participants. This is an alternative to printing labels from the Specimen Management page. Instructions to set the default label options are covered in the LDMS User Manual section **Labels-- Setting the default label format for a project**

Exercise 1: Bulk reprint of labels

Review LDMS User Manual section **Labels--Generating labels**

1. From the LDMS menu select **Labels**, and then click **Print Labels**
2. After setting the appropriate **filters**, specimens matching the criteria populate in the grid.
3. Set filters to show all specimens created during this training
4. Use the check boxes to mark the specimens that need labels.
5. Click **Print Labels**.
6. In the **Print Labels** menu set the **Format and Size** if not already selected
7. Click **Generate Labels**

Advanced Exercise 1: Custom Labels

Review LDMS User Manual section **Labels--Customizing label formats**

1. In the menu bar, hover over **Labels**, and then click **Define Custom Labels**
2. In the **Project** list, select a locally defined project
3. In the **Format** list, select a format
4. Click **Create Format** button
    a. Use the **Copy fields** checkbox to copy the old format to the new one, or
    b. Leave the box unchecked to **create a blank format**.
5. Set format field to name entered in step above
6. Click **Modify** format
7. Click a position in the label, select an item from the list below the Fields section, and then click **Set Field**.
8. **Repeat** Step 7 until all wanted data points have been added to the label.

Note: *The number in parenthesis is the character count. There is a maximum of 17 characters per row*

Storage

The Storage page is used to create a virtual representation of the storage structure at your lab. We will build a box, a shelf, and a Storage Structure.

Configuring templates for storage items such as containers should only need to happen one time at your laboratory. These templates are not required but can save time when adding items to your storage structure.

Exercise 1: Configuring a storage container template

Review LDMS User Manual section **Storage-- Storage templates--Creating storage item templates**

Create a template for a container at your laboratory.

Name:	______________________________	
Dimensions:	Rows ______	Columns ______
Column Labels (Circle):	Numeric	Alphabetic
	Left to Right	Right to Left
Row Labels (Circle):	Numeric, Alphabetic	Left, Right
	Top to Bottom	Bottom to Top
Fill Order (Circle):	Left to Right	Right to Left
	Top to Bottom	Bottom to Top
Excluded Position(s):	______________________________	

1. Select **Container Templates** from the **Storage** menu bar item.
2. Configure the desired box specifications, indicating the following:
    a. **Name**
    b. **Number of Rows, Number of Columns**
    c. Select the **fill order** and **labeling** information (or positions only)
3. Click **Save Template**.

The newly-created container template will be available in the Saved Templates listing.

Note: *The ability to create a template is also available when adding a new container.*

Exercise 2: Adding a container to a level

Review LDMS User Manual section **Storage--Assigning storage locations--Adding a container to a level**

Levels and containers can be added to an existing storage unit if space permits, based on its configuration. If the rack is configured to hold 25 containers and there are currently 25 containers in the rack, you will not be able to add additional containers. Containers can be added to both racks and shelves.

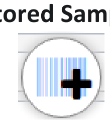
1. Select **Stored Samples** from the **Storage** menu bar item
2. Click the **down arrow** next to the **Edit** button on the level that will hold the container, and then click **Add New Container**.
3. The Create container window will open.
4. Enter the number of new containers to add in the **Number to add** field.
5. Select the template created in the previous exercise in the **From template** field.
6. The information from the template will be populated into the remaining boxes. You can still modify this information, if needed.

   Note: *A template is not required. The dimensions, labelling, and fill order can always be entered manually each time. The user also has the option to save this manual entry as a new template by checking Save as New Template and providing a name.*

7. Click the Continue button.
8. The Select position window will open.
9. Enter a descriptive name for the first container into the Name box. This is the label for the new container as it will appear in the storage tree.
10. Specify the position for the new container on its parent level by doing one of the following:
    a. Select a position for the new container from the Position box.
    b. Click on an available position in the Preview section.
11. Click the Continue button.
12. Repeat for remaining containers.

Exercise 3: Storing specimens with a barcode

Review LDMS User Manual section **Storage--Assigning storage locations-- Assigning a storage location to specimens**

1. **Highlight** a container in the **Stored Samples** page
2. The barcode icon changes to 
3. To store automatically, select Auto Assign Storage Positions at the top of the page
4. **Scan** LDMS barcode.

5. If *Auto Assign* is **not checked** then the **Select position** for specimen window will open. Follow the next two steps:
   a. **Select the position** where the specimen will be stored from either the Position box or the Preview image.
   b. Click **Continue**.
6. If *Auto Assign* is **checked**, scan the next specimen.

Exercise 4: Storing specimens by selection

Review LDMS User Manual section **Storage--Assigning storage locations--Assigning a storage location to specimens**

1. **Highlight** the desired box and click the **Edit** button **drop-down arrow**.
2. Select **Store Specimens**
3. Select **Filters** to locate the new record. E.g., Project, Received Date
4. Specimens available to be stored will populate the **Available Specimens** grid.
   Note: *The number of specimens per page can be increased using the drop-down in the bottom corner. The default page size can be set in Administration—Lab Settings.*
5. *Select the desired specimens by clicking the check box next to the grid.*
   Note: *As specimens are selected, the number of available spaces are calculated dynamically below the checklist. The Specimens will remain selected until they are either unchecked or the Clear Selected button is clicked. This allows the user to perform multiple filter searches.*
6. After the specimens are selected. Click **Continue**.
7. Select the box **position** for the indicated specimen or click to select Auto-fill all from selected position. Click **Continue**.
8. The samples will be stored in the designated positions within the box.
9. Click **Edit** for the box in which samples were just stored.
10. Click the **Report** dropdown arrow to generate the **Container Report** to assist in the physical storage of the specimens.

Exercise 5: Moving items in storage

Review LDMS User Manual section **Storage--Moving items in storage**

1. From the **Actions Box** select **Move Storage Item(s)**
2. **Select the items** to be moved using the checkboxes to the right. Specimens, containers, racks, or shelves can be moved.
3. Click next to **select the destination**. If specimens are selected, a container must be the destination. If containers are selected a rack or shelf must be the destination.
4. Proceed through the position selection menu. **Assign a location** to the specimen(s) in the container or containers on a rack or shelf.
   [Optional] If available, use the **Move Exercise Destination** box on **Shelf 2, Rack 1** as your destination

Exercise 6: Edit button functions

Part 1: Specimen position

1. Click the **Edit** button to the right of a specimen.
2. In the Edit Stored Specimen window, **select a new position**.
3. Before saving the new position, click **Edit Specimen**, note the options available.
4. **Close** the **Edit Aliquot** window.
5. Click **Save** in the Edit Stored Specimen window.

Part 2: Edit Storage Container

1. Click the **Edit** button to the right of a container.
2. The user is able to **adjust** the following:
    a. Name
    b. Dimensions*
    c. Labeling of Columns/Rows
    d. Fill order
    e. Excluded Positions*
    f. Comment

    * Limited if specimens are stored

    Note: *To change the positon of a specimen, click in the position field or the edit button in the Stored Specimens grid. The Edit Stored Specimen window will pop-up (See Part 1). The user can also consolidate a container by selecting the Consolidate Container button.*

3. Click **Save**.

Part 3: Edit Level

1. Click the **Edit** button to the right of a rack or shelf.
2. The user is able to **adjust** the following:
    a. Name
    b. Dimensions*
    c. Labeling of Columns/Rows
    d. Fill order
    e. Excluded Positions*
    f. Comment

    * Limited if positions are occupied

3. In the SubLevels grid:
    a. Change position by clicking in the Position field
    b. Click the Edit button to bring up the item's Edit menu
4. Click **Save**.

Exercise 7: Drop-down menu options

Part 1: Mark storage item to ship

1. Click the **Edit** button **drop-down arrow** for the storage item to mark, select **Mark to ship**.
2. Select the **Mark to ship checkbox, fill out intended Lab ID, ship date, and/or Ship Category** to be able to filter on these items.
3. Click **Save**.
4. A green ribbon flag will appear over the storage item icon.

Part 2: Set frozen information

1. Click the **Edit** button **drop-down arrow** for a container
2. Select **Set Frozen Info**
3. **Highlight** one or multiple specimens
4. Enter a new **Frozen Date, Frozen Time, and Processing Tech Initials**
5. Click **Update Selected Specimens**
6. Click **Save**

Part 3: Removing items from storage

Review LDMS User Manual section **Storage--Removing items from storage**

1. **Locate** the storage item or specimen that you want to remove by using the **filters** on the left side of the Storage page.
2. From the **Edit** button **drop-down arrow** to the right of the item, select **Delete** (for specimens, Remove)
3. The Delete (or Remove) window will open.
    a. **Optional:** If you want to change the specimen(s) being removed to unavailable, select the 'Set as Unavailable to be stored again' check box. When selecting this option, you will also be prompted to select a condition for the specimens and enter a comment. This comment will be applied to each specimen.
4. Click the **Delete or Remove** button.

Part 4: Assign Tests [Optional]

1. Click the **Edit** button drop-down arrow for a container
2. Select **Assign Tests**
3. In the **Assign Tests** menu, **select** a test from the menu
4. Click **Assign Test**.
5. In the grid, try out the **Test Not Performed**, **Reason for No Result**, **Comment**, and **Delete** functions
6. Click **Save**

Exercise 8: Reports

Review LDMS User Manual section **Storage--Assigning storage locations--Generating a printable list of what is in storage** and **Container report**

Part 1: Edit button menus

1. In the storage tree, **locate the container** for which you need to generate a report.
2. To the right of the storage item, click **Edit**.
3. Click the **down arrow** next to the **Reports** button, and then click either **Storage Detail, Container, or Empty Storage Location**.
4. In the **File Type box**, select **PDF** (*.pdf) and then click **Generate Report**.
5. Repeat until you have successfully generated all three reports

The Storage Detail and Empty Storage Location reports are also available for the storage unit, level, and sub-level in the storage tree.

Part 2: Storage Action Report

1. From the **Actions Box** select **Storage Action Report**
2. Select **This Login Session**
3. Keep all three actions (Adds, Deletes, and Moves) selected
4. Click **Generate Storage Action Report**

Exercise 9: Finding Specimens in Storage

Part 1: Applying Filters

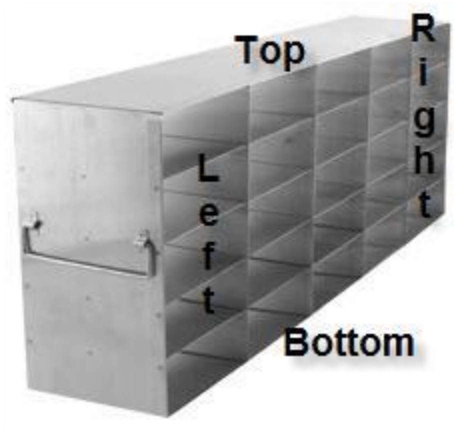
Practice applying and removing filters to see how they limit the specimens displayed in the on the Stored Specimens page.

Part 2: Using the LDMS barcode

1. Open the **Stored Samples** page
2. The barcode icon changes to 
3. **Scan** a barcode used in Exercise 3 or one known to be in storage
4. The storage tree will expand and the scanned specimen will be highlighted

Advanced Exercise 1: Configuring a level template [Rack]

Review LDMS User Manual section **Storage--Storage templates--Creating storage item templates**



In this example we are building a template for a 5x5 stainless steel rack.

Name:	5 x 5 stainless steel rack	
Dimensions:	Rows: 5	Columns: 5
Column Labels (Circle):	Numeric	Alphabetic
	Left to Right	Right to Left
Row Labels (Circle):	Numeric, Alphabetic	Left, Right
	Top to Bottom	Bottom to Top
Fill Order (Circle):	Left to Right	Right to Left
	Top to Bottom	Bottom to Top
Excluded Position(s):	____________________________	

1. Select **Level Templates** from the Storage menu bar item.
2. **Configure** the rack specifications, indicating the following:
    a. Name
    b. Number of Rows, Number of Columns
    c. Select the fill order and labeling information (or positions only)
3. Click **Save Template**.

The newly-created rack template will be available in the Saved Templates listing.

Advanced Exercise 2: Adding a storage unit

Review LDMS User Manual section **Storage—Assigning storage locations—Adding a new storage unit**

In this example we are going to add a freezer with 4 shelves. The shelf is configured in a separate step.

1. Select **Stored Samples** from the Storage menu bar item.
2. Select **Add Storage Unit** from the **Actions** box.
3. **Define** the following:
    a. Storage Unit Name: This is the name that will appear in the storage tree
    b. Type: Freezer
    c. Temperature: -80 C
    d. Rows: 4
    e. Columns: 1
4. Click **Save**.

Hint: When building a freezer the column equals one and the rows represent the number of shelves.

Advanced Exercise 3: Adding additional levels to a storage unit

Review LDMS User Manual section **Storage—Assigning storage locations—Adding a new level in a storage unit**

A shelf can be configured to hold racks or containers. When configuring for racks, the row is one and the columns represent the number of racks. For containers, the dimensions are increased to total the number of containers on the shelf. A 6x6 shelf can hold 36 containers.

Levels and containers can be added to an existing storage unit if space permits, based on its configuration. If the storage unit is configured to hold 4 shelves and there are currently 4 shelves in the unit, you will not be able to add additional shelves.

1. Click the **Edit button drop-down arrow** to the right of the freezer created in the previous exercise
2. Select **Add new level**.
3. **Configure** the shelf to hold 6 racks:
    a. Rows: 1
    b. Columns: 6
    c. Positions Only
    d. Fill, Left to Right, Top to Bottom
4. Click **Continue**.
5. In the **position selection menu**, place the shelf in the first position of the new freezer.

6. Click **Save**.
7. Click the **Edit button drop-down arrow** to the right of the new **shelf**, Select **Add new level**.
8. In the **From template** menu select the rack template created in Advanced Exercise 1.
9. Enter a name in the **Name** field
10. Click **Continue**.
11. In the **position selection menu**, place the rack in the first position of the shelf.
12. Click **Save**.

Advanced Exercise 4: Creating a Freezer template

Review LDMS User Manual section **Storage--Storage templates--Creating storage item templates**

If your laboratory has multiple freezers that are the same model (or capacity), you can save time by creating a freezer template that can be added multiple times. In this example we are going to create a template for the Frontier Science Upright Large Capacity -86 °C Ultra Low Freezer (Model number FS-2086). The freezer has 4 shelves, each shelf holds 6 racks.

Part 1: Configuring a level template [Shelf]

A shelf template must be configured first. This template along with the rack template from Advanced Exercise 1 will be combined to create a virtual freezer.

1. On the navigation menu, hover over **Storage**, and then click **Level Templates**
2. **Define** the following:
    - **Name:** FS-2086 shelf
    - **Rows:** 1
    - **Columns:** 6
    - **Label:** Positions Only
    - **Fill Order:** Left to Right, Top to Bottom
3. Click **Save Template**

Part 2: Configure a Storage Unit template

1. On the navigation menu, hover over **Storage**, and then click **Storage Unit Templates**
2. Define the following:
    - **Name:** FS-2086
    - **Type:** Freezer
    - **Temperature:** -80 C
    - **Rows:** 4
    - **Columns:** 1
    - **Positions only**
3. In the **Default Levels** to the left of Storage Unit, click **Add Level**
    a. In the **Saved Templates** menu, select FS-2086 shelf
    b. In the **number to add** box, enter **4**
    c. Click **Continue**
    d. Add the shelf template to the 4 available positions
    e. Click **Continue**
4. Click **Add Level** for the first shelf listed
    a. In the **Saved Templates** menu, select **5 x 5 stainless steel rack**
    b. In the **number to add** box, enter **6**
    c. Click **Continue**
    d. Add the shelf template to the 6 available positions
    e. Click **Continue**
5. **Repeat** for the remaining 3 shelves
6. Click **Save Template**

Shipping

Use the Shipping module to batch specimens for shipping, prepare shipping files, view shipping history and print shipping related reports.

Exercise 1: Creating a new Batch

Review LDMS User Manual section **Shipping—New Shipments—Creating new shipments**

1. On the navigation menu, hover over **Shipping**, and then click **Pending Shipments**
2. Select **Create Shipment** in the **Actions** box. The **Pending Shipment Preview** window opens.
3. On the **General tab**, complete the **Shipment Date, Format, and Temperature** fields.
4. Click on the **Shipping Destination** tab.
    a. Select a **Lab** from the dropdown menu
    b. Select the **Contact Person** for the shipment.
5. Click on the **Contact at Sending Lab** tab and complete the information: **Name, Phone Number, and E-mail**.
6. [Optional] Enter **Comments, Shipment Carrier, Tracking Number i**n the **Shipment Notes** tab.
7. Scroll to bottom of the screen, click **Save**.
8. **Repeat** steps 1-7 to create one more batch.

Exercise 2: Adding individual specimens to new batch

Review LDMS User Manual section **Shipping—New Shipments—Creating new shipments**

1. Click the **Edit/Ship** button of a batch created in the **Pending Shipments** page.
2. Click to open the **Shipment Contents** tab.
3. Click **Add New** above the **Shipping Containers** grid.
4. The **Create Shipping Container** menu opens. After entering the **dimensions** of the shipping box a 2D representation appears in the Preview window. Set the **labels and fill order**, any changes to these will also be represented in the Preview window.
5. Set the **Sort Order** and click the **Add Specimens** button above the Samples grid.
6. The **Select Specimens** window appears. The sample filters present in Specimen Management are here to assist in finding the specimens to add to your shipment.
7. After setting the **filters**, the available specimens will be in the **Available Specimens** grid. **Select** the specimens to add to your batch by clicking the checkbox.

    Note: If the Mark to Ship flag has been used, set the filter in the Shipment Filters menu to 'Yes'

8. Click the **Continue** button
9. You will return to the **Create Shipping Container** menu. The selected specimens are displayed in the **Samples** grid. Click the **Add** button

10. The container is listed in the **Pending Shipment Preview** menu. Scroll down and click **Save**.
11. **Print** pre-shipment **manifest**. This can be used at your bench to set up your shipping container.
    a. Click the **Edit/Ship button drop-down arrow** next to the View button to the right of the batch, and then click **Generate Manifest**.
    b. Select **PDF** from the File type box.

Exercise 3: Adding storage containers

Review LDMS User Manual section **Shipping—New Shipments—Creating new shipments**

1. Click the **Edit/Ship button** of a batch created in the **Pending Shipments** page.
2. Click to open the **Shipment Contents** tab.
3. Click **Add New** above the **Storage Containers** grid. The available Storage Containers appear.
4. **Locate** the desired storage container and click the checkbox, and **Add Selected to Shipment** to add the container to the shipment. The selected storage container will display in the Pending Shipment Preview.

   Note: If you assigned the Mark to Ship flag to a storage item, apply the filter to assist in selection.

5. Scroll down. Click **Save** to save the batch.

Exercise 4: Performing shipment QA/QC

Review LDMS User Manual section **Shipping— Shipment QA/QC—Performing QA/QC**

1. Click the **Edit/Ship button dropdown arrow** to select QAQC. The **QAQC Entry** window opens.

2. If empty, **enter initials** in the **Performed By** box.
3. Click on the **first position** in the 2D box image.
4. [Barcode option] **Scan** the item from the highlighted position.
5. [Manual option] Ensure the **Global Specimen ID** for the specimen in the physical location in the box agrees with the ID displayed in the QAQC Entry window. **Pass** Specimen, if they agree. **Fail** Specimen, if they do not. It is preferable to use a scanner for this process. When scanning the Pass/Fail buttons are not used.
6. In the batch has multiple containers, **choose the next container** in the drop-down menu.
7. Click **Save**. Generate the QAQC report, if needed.
8. **Repeat** for the remaining batches created during this training.

Exercise 5: Creating shipping files

Review LDMS User Manual section **Shipping—New Shipments— Sending a pending shipment**

1. Click the **Edit/Ship button** for the batch in the **Pending Shipments** list.
2. At the bottom of the Pending Shipment Preview page, scroll down, and click **Ship**, Click **OK.** The shipment message appears and the shipping file generates. Save the shipping file to the desired location.
3. This file must be sent to the Receiving lab. Confer with the lab the preferred method of transmission (i.e. email, thumb drive, etc.)
4. The batch is automatically transferred to the **Shipment History** page.

Note: *For HVTN, Cross-LIMS shipping file type should be used when shipping to Precision Bioservices, Lab 512, Standard Manifest Report is to be included.*

Exercise 6: Shipment paperwork

Review LDMS User Manual section **Shipping—New Shipments— Generating a shipping manifest**

1. Select **Shipment History** in the **Shipping** menu listing.
2. Click the **View button dropdown arrow** and select **Generate Manifest**.
3. File type should be set to **.PDF**. Click **Generate Report**. Save the report to the desired location.
4. A printed copy of this report must be included in the shipment
5. **Repeat** steps 1-3 for the **Container** report

Exercise 7: Importing specimens

Review LDMS User Manual section **Shipping—Receiving shipments**

1. On the **Receive Shipments** page, click **Select File**
2. Browse to the shipping file and click **Open**
3. Click **Import directly into storage**
4. Click **Preview Shipment**
5. Select a **temperature** in the **Confirm Temperature** list
6. [Optional] Click **Edit Condition Codes**
    a. Highlight a sample and change some of the fields below
    b. Click **Update**. Click **Save**
7. Review shipment contents and click **Receive Shipment**
8. Go to **Shipment History**. From the **Edit button drop-down arrow** select **QA/QC**
9. Perform QA/QC on the new shipment.
10. Go to **Stored Specimens** page.

11. Review contents of **Shipping Import Freezer**

Question: Can you permanently keep items in the Shipping Import Freezer?

Reports

Review LDMS User Manual section **Reports--Generating a report**

The LDMS provide several reports that assist in verifying the data is complete and correct. These reports are also useful in providing information if your lab is being audited, specifically the Specimen Log, Storage Detail, Administrative reports, and the Custom Report Builder.

Exercise 1: Specimen log/Specimen processing report

Review LDMS User Manual section **Reports--Specimen reports**

Generate a Specimen Log report for the specimens accessioned today. If PBMCs were processed also generate a Specimen Processing report.

Part 1: Specimen Log Report

1. On the LDMS menu bar, hover over **Reports** and click **Standard Reports**.
2. Select **Specimen** in the Report Categories box.
3. Select **Specimen Log Report** in the Report box.
4. In **Filter Criteria**:
    a. **Field**: Received Date **Operator**: '=' **Value**=Current Date
5. Set **File Type** to PDF
6. Click **Generate** Report

Part 2: Specimen Processing Report

1. On the LDMS menu bar, hover over **Reports** and click **Standard Reports**.
2. Select **Specimen** in the Report Categories box.
3. Select **Specimen Processing Report** in the Report box.
4. In **Filter Criteria**:
    a. **Field**: Received Date **Operator**: '=' **Value**=Current Date
    b. **Field**: Derivative **Operator**: '=' **Value**=CEL [optional]
5. Set **File Type** to PDF
6. Click **Generate Report**

Exercise 2: Specimens not in storage report

Review LDMS User Manual section **Reports--Storage reports**

1. On the LDMS menu bar, hover over **Reports** and click **Standard Reports**.
2. Select **Storage** in the Report Categories box.
3. Select **Specimens Not in Storage** in the Report box.
4. Set **File Type** to PDF
5. Click **Generate Report**

Exercise 3: Storage detail report

Review LDMS User Manual section **Reports--Storage reports**

1. On the LDMS menu bar, hover over **Reports** and click **Standard Reports**.
2. Select **Storage** in the Report Categories box.
3. Select **Storage Detail** in the Report box.
4. In **Filter Criteria**:
    a. **Field**: Received Date **Operator**: '=' **Value**=Current Date
5. Set **File Type** to PDF
6. Click **Generate Report**

Exercise 4: Administrative reports

Review LDMS User Manual section **Reports--Administrative reports**

Part 1: User permissions report

This report provides the user with a summary of all the users in the LDMS and lists their current permissions within the LDMS.

1. On the LDMS menu bar, hover over **Reports** and click **Standard Reports**.
2. Select **Admin** in the Report Categories box.
3. Select **User Permissions** in the Report box.
4. Set **File Type** to PDF
5. Click **Generate** Report

Part 2: Transaction Log Report

This log is a historical record of all transactions performed by users in your LDMS database. Generating the report as a Comma Separated text file allows the user to easily search the contents in Excel.

1. On the LDMS menu bar, hover over **Reports** and click **Standard Reports**.
2. Select **Admin** in the Report Categories box.
3. Select **Transaction Log Report** in the Report box.
4. In **Filter Criteria**:
    a. **Field**: Start Date **Operator**: '=' **Value**=Choose Monday of the current week
5. Set **File Type** to CSV
6. Click **Generate Report**
7. **Open** report in **Excel** and **Review**

NOTE: If your lab has converted to web LDMS from our Windows platform, this log will not contain transactions from your Windows database.

Advanced Exercise 1: Custom Inventory Report

Review LDMS User Manual section **Reports--Custom Report Builder**

The custom report builder is used to export specimen data into a generic format to import into other programs such as Excel. The data fields listed under All Fields are available to include in the report under (Fields To Display) or to sort the data (Sort Fields By). The Name of the field will become the header in the export file.

To make the list of fields more manageable, limit the view by selecting/deselecting the category. Use the **Fields to Display** check boxes to include the data item in their respective columns. The order the fields are listed is the order they will appear in the report**. Select the following**:

Category	**Information to Display**
Specimen	ID1 Protocol Collection Date Collection Time Primary Additive Derivative
Storage	Stored (storage status) Storage Unit (Freezer) Level (i.e. Shelf) Sub-level (i.e. Rack) Container Position
Shipping	Shipment number Shipment date Destination Lab ID

Note: In the field list, the primary participant identifier (PID, PTID, Subject ID) is ID1; the study identifier (protocol or study) is ID2; and the optional participant identifier is ID3

1. In **Filter Criteria**:
    a. **Field**: Collection Date **Operator**: '=' **Value**=Current Date
    b. **Field**: Specimen Type **Operator**: '=' **Value**=Aliquot
2. Set **File Type** to CSV
3. Click **Preview**. Review contents of the window. If everything looks correct, close window and proceed to next step.
4. Click **Generate Report**

Advanced Exercise 2: Custom PBMC Processing Report

Review LDMS User Manual section **Reports--Custom Report Builder**

If PBMCs were entered in this training, create a custom PBMC processing report that shows the following **Specimen category** fields:

- PID
- Protocol
- Global Specimen ID
- Derivative
- Collection Date
- Processing Date
- Processing Time
- Processing Tech Initials
- Cell Count
- Frozen Date
- Frozen Time

1. In **Filter Criteria**:
    a. **Field**: Received Date **Operator**: '=' **Value**=Current Date
    b. **Field**: Derivative **Operator**: '=' **Value**=CEL [optional]
2. Set **File Type** to CSV
3. Click **Generate Report**
4. **Save** this report for future use.
    a. **Enter a Name** for the report in the **Saved Queries** field
    b. Click **Save**

Question: Are all the required processing fields present for the specimens created during this training?

Advanced Exercise 3: Using the Count Field Option

Review LDMS User Manual section **Reports--Custom Report Builder**

The count field will aggregate the number of occurrences of the chosen field. In this example we are using the count field option in conjunction with the Global Specimen id to find the total number of specimens for each Study in a Project.

Select the following in the **Specimen category** fields:

- Protocol
- Derivative

1. Click **add COUNT Field**
   a. **Field**: Select Global Specimen ID
   b. **Label**: Aliquot Count
   c. **Distinct**: unchecked
2. In **Filter Criteria**:
   a. **Field**: Project **Operator**: '=' **Value**=Project used in during training
   b. **Field**: Specimen Type **Operator**: '=' **Value**=Aliquot
3. Set **File Type** to CSV
4. Click **Preview**. Review contents of the window. If everything looks correct, close window and proceed to next step.
5. Click **Generate Report**

Test Results

Exercise 1: Valid Run

Review LDMS User Manual section **Test Results**

Part 1: [Optional] Assign Test flag in Specimen Management

The user can apply the Assign Test flag in Specimen Management. Specimens with this flag can be found by applying the Assign Test filter. *Note that using this filter will show all specimens with this flag, even those that have been previously tested.*

1. In **Specimen Management**, use the **filters** to find the following three specimens
    - **Filter**: ID1 **PID**: 0666666C
    - **Filter**: Derivative **DER**: PL2
2. Click the **Edit** button next to one PL2 aliquot
3. In the **Assign Test** drop-down menu **select assay**.
4. Click **Save**
5. **Repeat** for the following PIDs:
    - 0777777F
    - 0888888I
    - 0999999L

Part 2: Creating a Run

Review LDMS User Manual section **Test Results--Add Pending Results**

1. In the **Action drop-down menu** select **Add pending results**
2. Select the assay in the **Test Name** drop-down menu
3. In the **General Tab** of the Create Pending Test Results window add the following information if available. Fields may differ by assay.
    - Run Date
    - Technologist Initials (multiple fields)
    - Version
    - Prep Method
    - Comments
4. In the **Results tab** the Kit controls have been loaded in the Controls grid
5. Click **Add Control** above the grid, in the Add Custom control window enter. For this example, enter a new VQA200 control.
    - Lot Number: VQA123456RT
    - Control Name: VQA200
    - Minimum Value: 64
    - Maximum Value: 642

6. Click **Add**, after the first entry the lot will be available in the **Lot Number** menu
7. Click **Add Specimens**, the Select Specimens window will open.
8. **Apply the filters** to find the specimens to include on the batch.
   Hint: Assigned Test is located in **Specimen Filters**
9. Click **Save** to create a new entry in the **Test Results** grid.
10. In the **Edit** drop-down menu, select **Pending Test Results Report**
11. Click **Generate Report**

Part 3: Entering Assay Results

Review LDMS User Manual section **Test Results--Add Pending Results**

Review LDMS User Manual section **Test Results--Reviewing a Test Run**

1. Click the **Edit** button for the **Run ID** created above
2. Go to the **Results** tab
3. Click the **Upload** file button above the last grid in the window
4. In the **Open** file dialog box open file, upload assay results file.

   Note: *LDMS will automatically match on Global Specimen ID, Other Specimen ID, or PID. For PID, only one specimen can be present in the file for the LDMS to automatically match*

5. Specimens that do not automatically match will appear in the **Unmatched** results from file grid
6. Apply this value to a specimen in the list by **dragging and dropping**
7. Click **Complete** to save the uploaded assay values

Part 4: Reviewing the Run

1. For a run with a **Status** of **Completed**, click the **Edit** button.
2. In the **General** tab, enter the **Review Date**, **Reviewer Initials**, and **Reviewer Comments**.
3. Click **Review**.

Exercise 2: Invalid Run

Using the steps from the previous exercise create a second run of four specimens plus controls.

Use the invalid run result file in the Training Profile.

Note: When filtering on the Assign Test flag in the LDMS, the software does not make a distinction between pending and completed assays. You must use the additional filter On a Test Run and set to 'No' to find the additional samples to add.