User Manual

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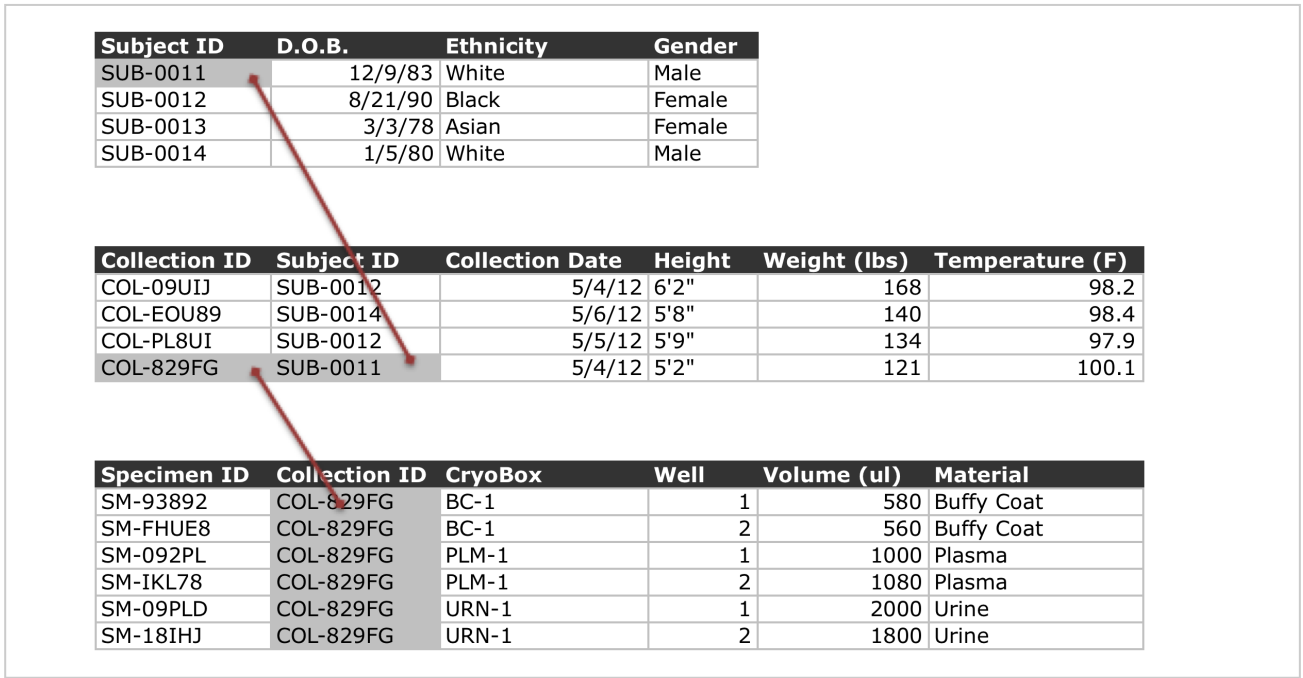
Chapter 1

1.1 What is epiSampler?

epiSampler is a java-based desktop application and networked solution for data collection and biological sample tracking in low internet-accessibility settings. epiSampler generates 2D barcoded cryogenic labels and provides a rich graphical user interface for recording specimen data, managing storage and tracking samples across multiple research sites. epiSampler also allows researchers to build and deploy custom survey forms employing field-level validation rules to ensure data accuracy and integrity. Data can be easily curated, queried and exported for use with other popular analytics and database software.

1.2 Understanding the Structure of Study Data.

epiSampler imposes organizational structure on data in order to programmatically identify relationships between data points at the specimen, collection and subject levels. The underlying database structure is made up of data tables linked by shared identifiers. This type of structure is known as a relational database.



Subject ID	D.O.B.	Ethnicity	Gender
SUB-0011	12/9/83	White	Male
SUB-0012	8/21/90	Black	Female
SUB-0013	3/3/78	Asian	Female
SUB-0014	1/5/80	White	Male

Collection ID	Subject ID	Collection Date	Height	Weight (lbs)	Temperature (F)
COL-09UIJ	SUB-0012	5/4/12	6'2"	168	98.2
COL-EOU89	SUB-0014	5/6/12	5'8"	140	98.4
COL-PL8UI	SUB-0012	5/5/12	5'9"	134	97.9
COL-829FG	SUB-0011	5/4/12	5'2"	121	100.1

Specimen ID	Collection ID	CryoBox	Well	Volume (ul)	Material
SM-93892	COL-829FG	BC-1	1	580	Buffy Coat
SM-FHUE8	COL-829FG	BC-1	2	560	Buffy Coat
SM-092PL	COL-829FG	PLM-1	1	1000	Plasma
SM-IKL78	COL-829FG	PLM-1	2	1080	Plasma
SM-09PLD	COL-829FG	URN-1	1	2000	Urine
SM-18IHJ	COL-829FG	URN-1	2	1800	Urine

Figure 1 - Relational Database Tables

1.3 Data Tables

epiSampler's underlying tables hold an array of data generated by epiSampler as well as data manually entered by end-users. Each and every data table must contain at least one of the following identifier types: a Subject ID, a Collection ID or a Specimen ID, though most contain at least two of the above.

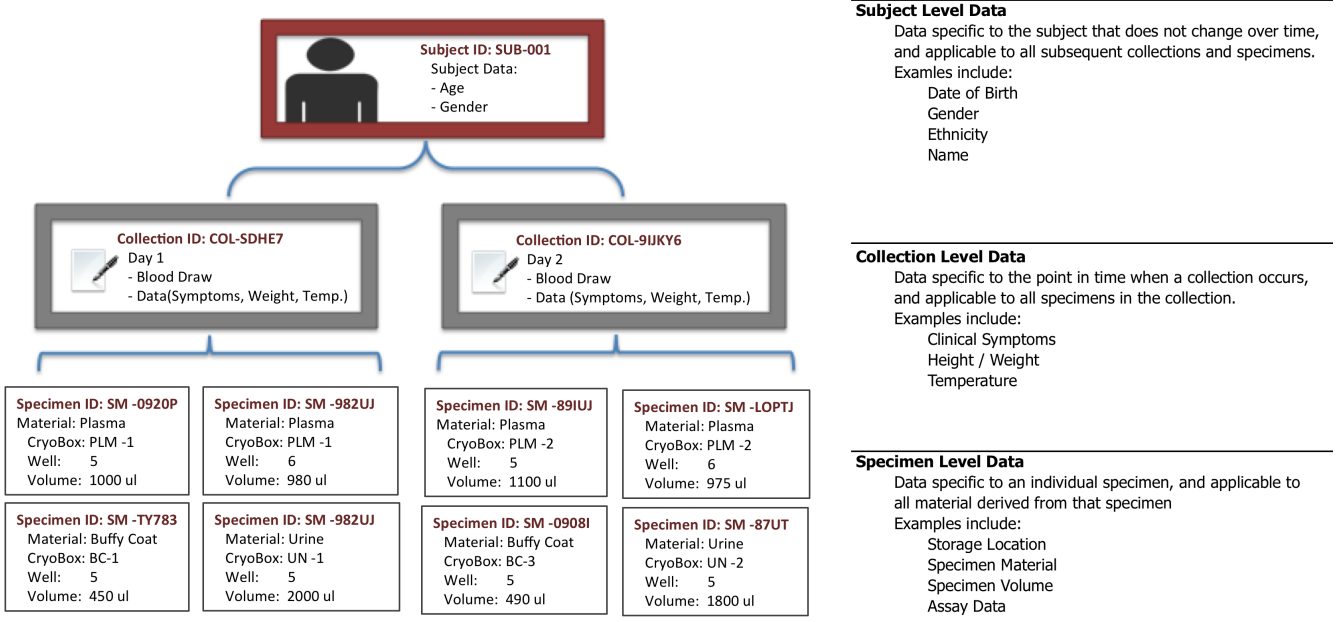


Figure 2 - epiSampler Data Tree

Specimen ID: Specimen IDs are unique IDs given to every biological specimen. epiSampler generates specimen IDs when labels are printed ensuring that each is unique. epiSampler-assigned Specimen IDs all begin with the letters SM.

Collection ID: All specimens are part of a collection kit. A 'collection' refers to the point in time at which a sample or data is obtained. A Collection ID links all of the specimens and data that result from a single collection. For example, a study may require that blood is drawn from a subject, and separated into serum and red blood cells.

While the vials containing the serum, red blood cells and whole blood would each have been given a unique Specimen ID, since they all originated from the same collection, they would all share the same Collection ID. In this way the serum and red blood cells can be linked to each other through the Collection ID. epiSampler-assigned Collection IDs all begin with COL.

Subject ID: The Subject ID refers to any given individual, animal or inanimate subject being studied. Subject IDs are not automatically linked to Collection IDs but instead the relationship is established via user-created data forms, and their underlying data tables. The format of Subject IDs is often stipulated by the study protocol, and a subject can be associated with any number of collections. For example, a study looking at blood chemistries over the course of a disease may require a new collection every day. Therefore, any subject in that study would be associated with multiple collections.

The three data levels create a tree-like structure (Figure 2) through which all specimens, specimen level data, collection level data and subject data are linked. The relationship makes it possible for highly complex data queries to be created on the fly using nothing more than a drag-and-drop interface.

1.4 Biological Specimen Data

Collection Kits
epiSampler allows a researcher to create a template for generating sample collection kits. Researchers and study staff can print any number of sample collection kits in which uniquely generated Specimen IDs linked by unique Collection IDs, all of which are printed together as a set of barcoded labels designed for use on cryogenic storage vials, paper data forms and other sample material.

Figure 3 shows a typical collection kit. It contains one label for Whole Blood, which, as per protocol, is separated into 2 vials of Plasma, one of Buffy Coat and one vial of Red Blood Cells. There is also data collection and enrollment consent form.

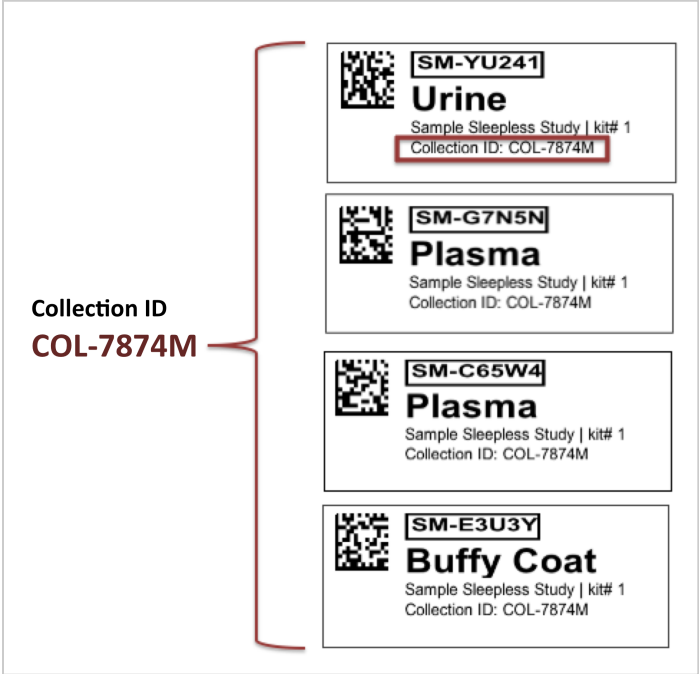


Figure 3 – Sample Collection Kit

Each label contains a unique Specimen ID and barcode, but they are all part of the same collection and therefore share the same Collection ID. epiSampler has stored the relationship between all elements of this sample kit. But how will these specimens be linked to other important data, including specimen storage information, clinical parameters collected during the sampling, and certain demographic information collected from the Subject?

1.5 Survey Data

epiSampler automatically tracks specimen storage information, but a researcher may also choose to run specific tests or assays on a specimen, and epiSampler is flexible enough to capture additional data at any of the three levels of data: Subject, Collection or Specimen. This is achieved by the use of Survey Forms and the underlying data tables they represent.

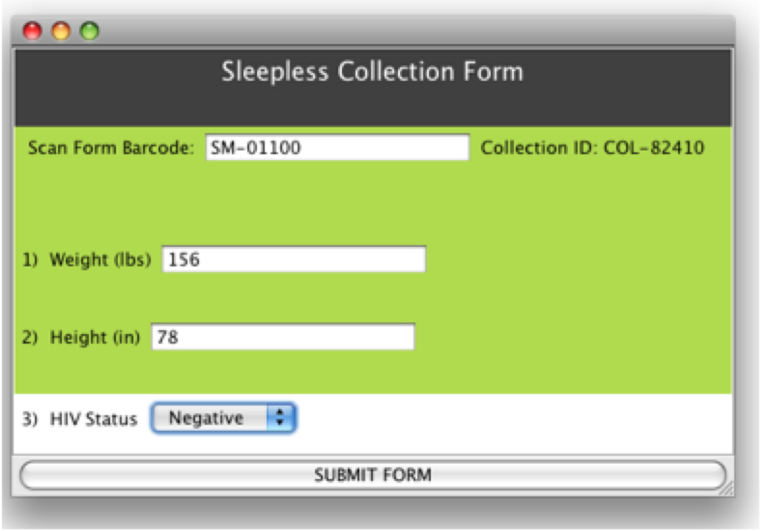
To Consider: Subject vs. Collection Data
It is important to collect the data at the appropriate level within the data structure. Doing so helps you avoid redundancy and ensures your data set is as robust as possible. Data should be collected at the level to which it most directly applies.

For example, a subject's date of birth might be considered a variable of interest every time you draw his blood, but it would be redundant to collect this each time. This is not collection-level data, but instead belongs at the subject level. Similarly, while the subject's temperature certainly only belongs to that subject, it is likely to be different every time. Associating temperature at the subject level would mean missing this data point at every subsequent collection.

Data that remains the same and true of a subject should be assigned to the subject level, while data that is only certain to be true at the point of collection is collection level data. Data that is only certain to be true of any one specimen, like assay results, or volume, is specimen level data. The first column, known as the table index, of a data table indicates what level of data that table contains.

1.5.1 Recording Collection-level data:

The simple form in figure 4 could be used to collect clinical parameters during sample collection. The survey form is a graphical user interface (GUI) for the underlying data table. The first field asks the



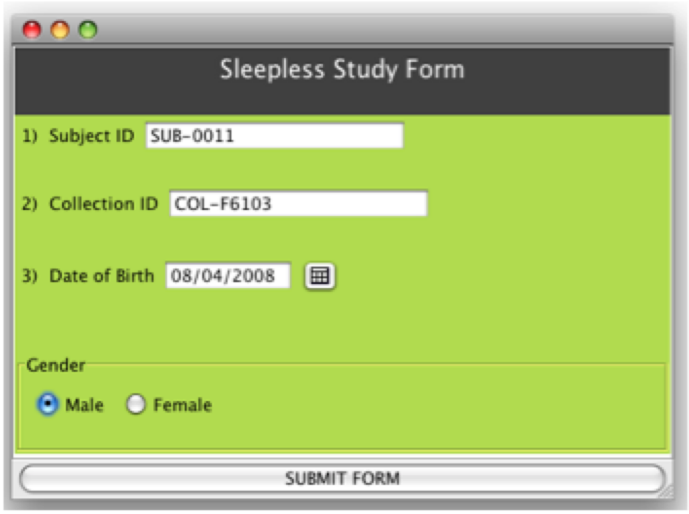
Collection ID	Weight (lbs)	Height (in)	HIV Status
COL-09302	134	67	Negative
COL-390HJ	140	72	Negative
COL-82410	156	78	Unknown
COL-F6103	160	74	Negative

Specimen ID	Collection ID	CryoBox	Well	Volume (ul)	Material	Specimen
SM-93892	COL-F6103	BC-1	1	580	Buffy Coat	SM-93892
SM-FHUE8	COL-F6103	BC-1	2	560	Buffy Coat	SM-FHUE8
SM-092PL	COL-F6103	PLM-1	1	1000	Plasma	SM-092PL
SM-IKL78	COL-F6103	PLM-1	2	1080	Plasma	SM-IKL78
SM-09PLD	COL-F6103	URN-1	1	2000	Urine	SM-09PLD
SM-18IHJ	COL-F6103	URN-1	2	1800	Urine	SM-18IHJ

Figure 4 - Collection Data Form

user to scan the form barcode. epiSampler automatically records the collection ID associated with the scanned barcode. Because the table's index column is Collection ID the data in the table can be tied to all specimens that share the same Collection ID. But how is this data tied to study subjects?

Figure 5 – Subject Data Collection Form



Subject ID	Collection ID	Date of Birth	Gender
SUB-0001	COL-89UJI	12/9/83	Male
SUB-0009	COL-092PL	4/5/76	Female
SUB-0010	COL-08UIJ	1/6/80	Male
SUB-0011	COL-F6103	3/23/78	Male

Collection ID	Weight (lbs)	Height (in)	HIV Status
COL-09302	134	67	Negative
COL-390HJ	140	72	Negative
COL-82410	156	78	Unknown
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SM-092PL	COL-F6103	PLM-1	1	1000	Plasma	SM-092PL
SM-IKL78	COL-F6103	PLM-1	2	1080	Plasma	SM-IKL78
SM-09PLD	COL-F6103	URN-1	1	2000	Urine	SM-09PLD
SM-18IHJ	COL-F6103	URN-1	2	1800	Urine	SM-18IHJ

1.5.2 Recording Subject Level Data

The sample form above (Figure 5) is linked to the data table, which is generated when the form is created by the researcher. Only two fields on the form, Subject ID, and Collection ID are enough to link the specimen data to a subject. In the example above samples SM-93892, SM-FHUE8, and so on belong to subject SUB-0011 linked through collection kit COL-F6103.

epiSampler uses a data 'spider' to constantly crawl the underlying data tables looking for links between data tables. As long there is at least one table containing both Subject ID and Collection ID, epiSampler will be able to identify the relationship.

Putting it together
As epiSampler crawls the database, the relationships diagramed above are established. As a result, using the epiSampler interface we can search for specimen SM-93892 and know that it is Buffy Coat stored in CryoBox BC-1, Well 1, and that the subject to which the specimen belongs was HIV negative and weighed 160 on the date of collection, and is a man born in 1978.

Chapter 2

2.1 Getting Started

Note: You will need an internet connection to download, install, and register epiSampler. Additionally, you will need a connection to create or add an already existing database.

2.1.1 Downloading epiSampler

1. Go to http://episampler.com/download
2. Download the installation package epiSystem.zip, unzip the folder and double click on epiSystem.jar. Upon launching epiSystem, the program will check the epiSampler.com servers for software updates. Any necessary updates will be installed, after which epiSampler will open.

Note: epiSampler is a java-based application. You may need to download and install Java Version 6 at http://www.java.com/en/download/index.jsp

Tip: You will always **open epiSampler by double clicking on epiSystem.jar**. It may be worthwhile to create a shortcut (PC: right click on the file, select make shortcut) or alias (OSX) and place it on your desktop.

2.1.2 Registering epiSampler on a Network:

You have two options for joining a network:

1) Join an existing network – If you are adding epiSampler to a new computer and would like to connect to an existing network and project you will need the Network ID and Network Key.

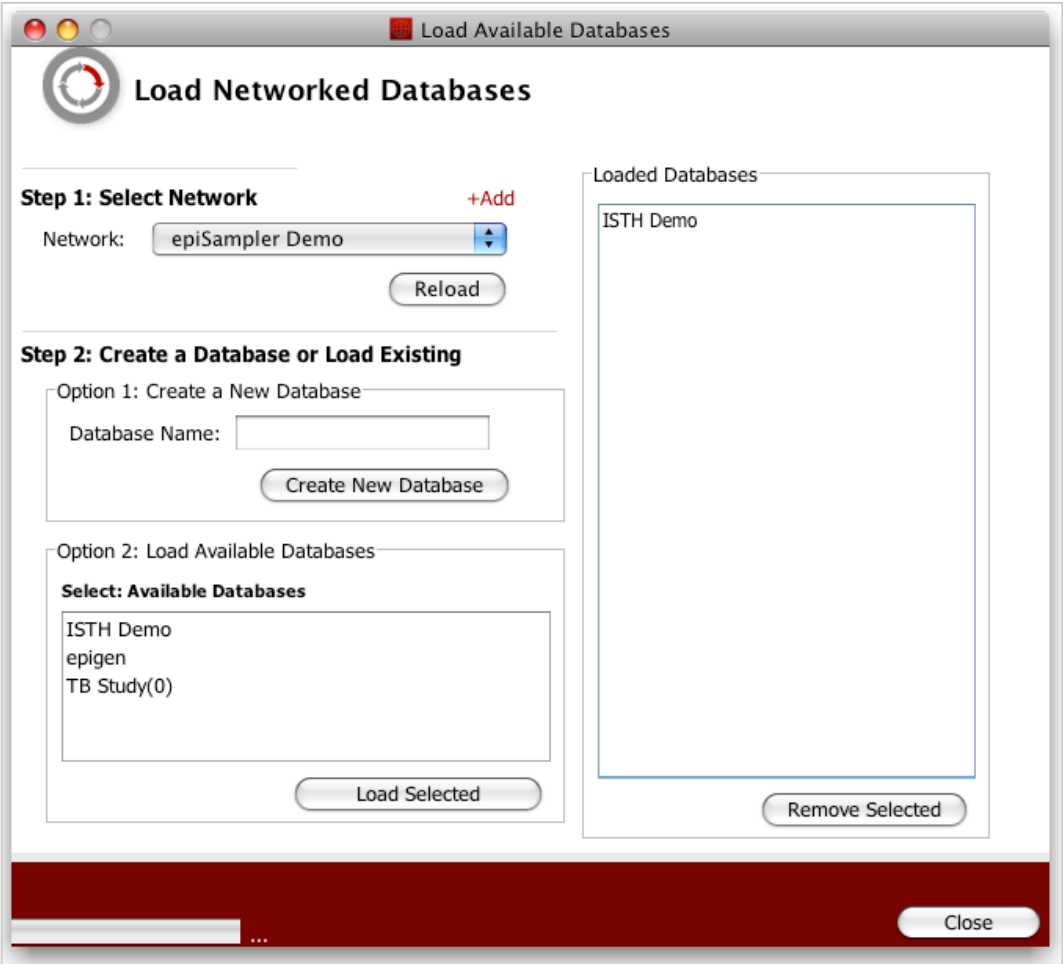
- or -

2) Creating a new network – if this is the first installation of epiSampler for this project you may need to create a new network. Go to http://episampler.com/registration

   If epiSampler is not yet connected to a network, you will be automatically prompted to enter this information upon launching the program.

2.2 Creating or Adding an Existing Network or Database

To add an additional network, create a new project or to connect to an existing project click the 'Add' button above 'Connect to a Database' in the login window, or open the window from *Menu: File-> Add Database*



2.2.1 Creating and Loading a Database:

Select the appropriate network, or add a new network

A) To create a new project/database, enter a project name and press 'Create New Database'.

-or-

B) To load an existing database, select the project from the list of available databases and press 'Load Selected'.

Important: After loading a database you will need to restart epiSampler. If you have created a new database you will be able to begin working with it immediately. If you have loaded an existing

database, you may need to wait until all of the existing data has been downloaded. The status of the current synchronization is visible in the bottom left corner of the login screen.

2.2.2 Removing a Database

Select the database you wish to remove from the 'Loaded Databases' list and press 'Remove Selected'. This will remove the database from this computer ONLY. The database will remain on the network and on any other computers that have it loaded. To permanently delete the database, you will need to do so through the admin panel on epiSampler.com http://episampler.com/admin

2.3 User Accounts

2.3.1 Adding a New User

New users can be added from the Login window as well as from *Menu: Settings -> User Accounts*

Follow the prompts to create a new account.

Tip: Default Location – select the location where this computer will be used most. If the location is not yet in the list, you may add a new location by clicking on '+New'

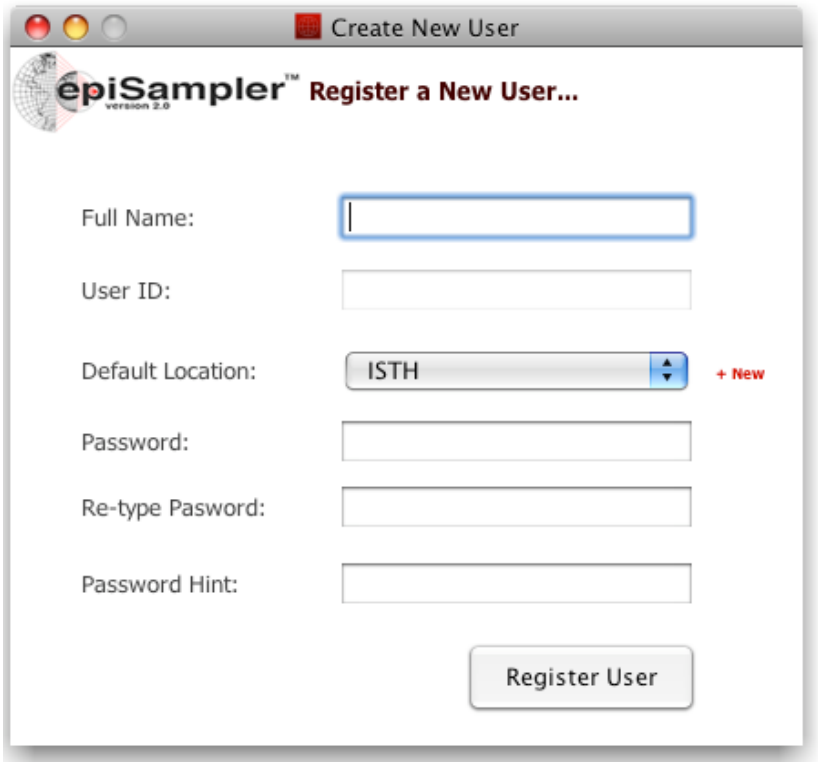
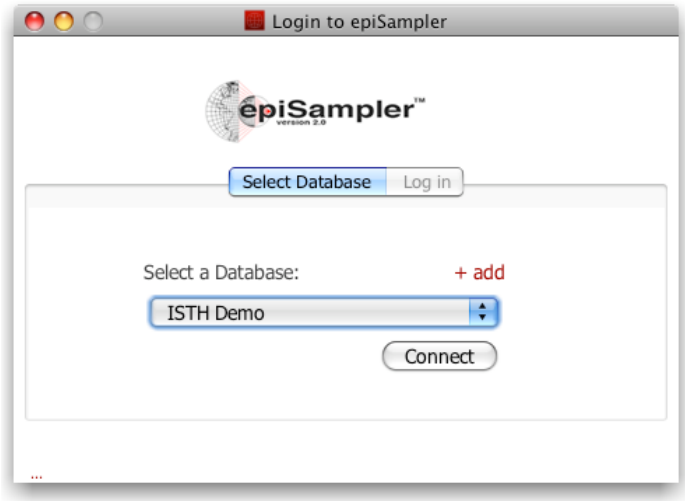


Figure 5 - Registering a New User



2.3.2 Logging In

Step 1) Select the Database you wish to work with from the dropdown and press 'Connect'.

Step 2) Select the your name from the list of users, or click 'Add' to add a new user to the project. Enter your password and press the 'Login' button.

2.3.3 Switching Database /User:

You can switch between databases and login as another user by clicking on '[change user or database]' on the epiSampler desktop.

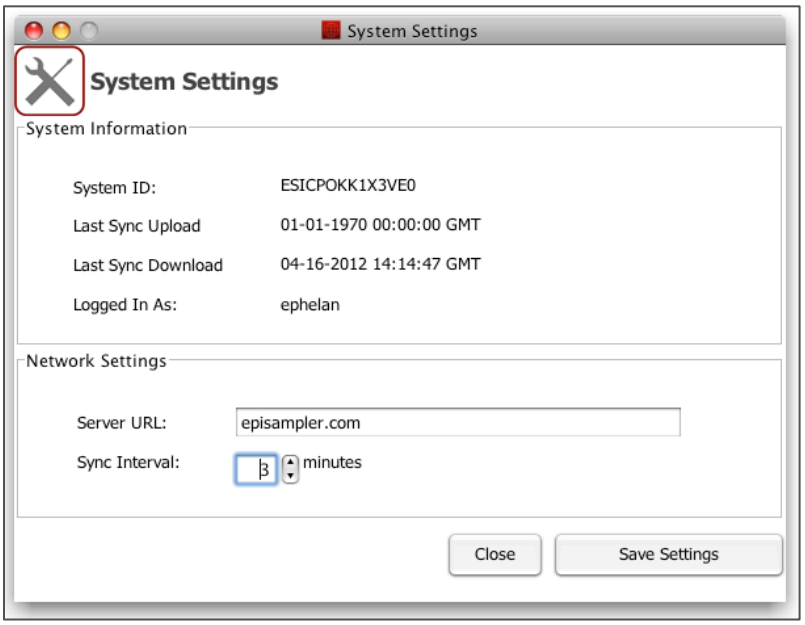
2.3.4 Managing Accounts – Changing your password

User accounts can be further edited and managed at *Menu: Settings->User Accounts.*

You may change your password, default location and full name here. You will not be able to change your User ID. You may delete users under the 'All Accounts' tab.

2.4 System Settings

Launch the system setting window by clicking on the System Settings Icon on the Quick menu or from *Menu: Settings -> System Settings*



System ID: This unique identifier allows this installation to be identified over the network. It is most important when setting up remote printing

Server URL: epiSampler is currently hosted by epiSampler.com. Future versions will

allow for private hosting. Until then, server URL is disabled.

Synch Interval: Network Synchronization occurs at regular intervals.

Save Settings by clicking the 'Save Settings' Button.

2.5 Printer Setup

Open the printer settings window from Menu: Settings -> Printer Settings

Margins
Every printer is different, and so you will need to adjust the margins to best align the label content on the label. Adjust one margin at a time and observe the changes using Test Print. When you have best adjusted the alignment, you may save the changes.

Local vs. Remote Printing
Select local printing if the computer you are working with is connected directly to the barcode printer. If you have multiple installations of epiSampler in a lab, or across multiple sites you may print from any installation, over the network to any computer that is able to print locally.

Setting up remote printing
You will need to locate or obtain the System ID of the computer to which you wish to print remotely. The System must be on the same network. Select 'Remote Printing' and enter the System ID of the destination computer. You may want to print a test page to ensure everything is set up correctly.

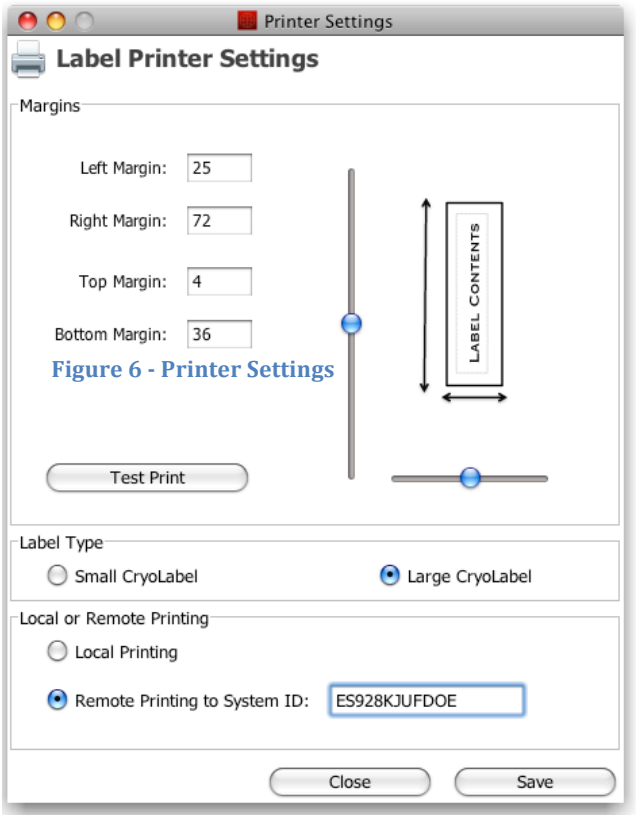


Figure 6 - Printer Settings

2.6 The epiSampler Desktop

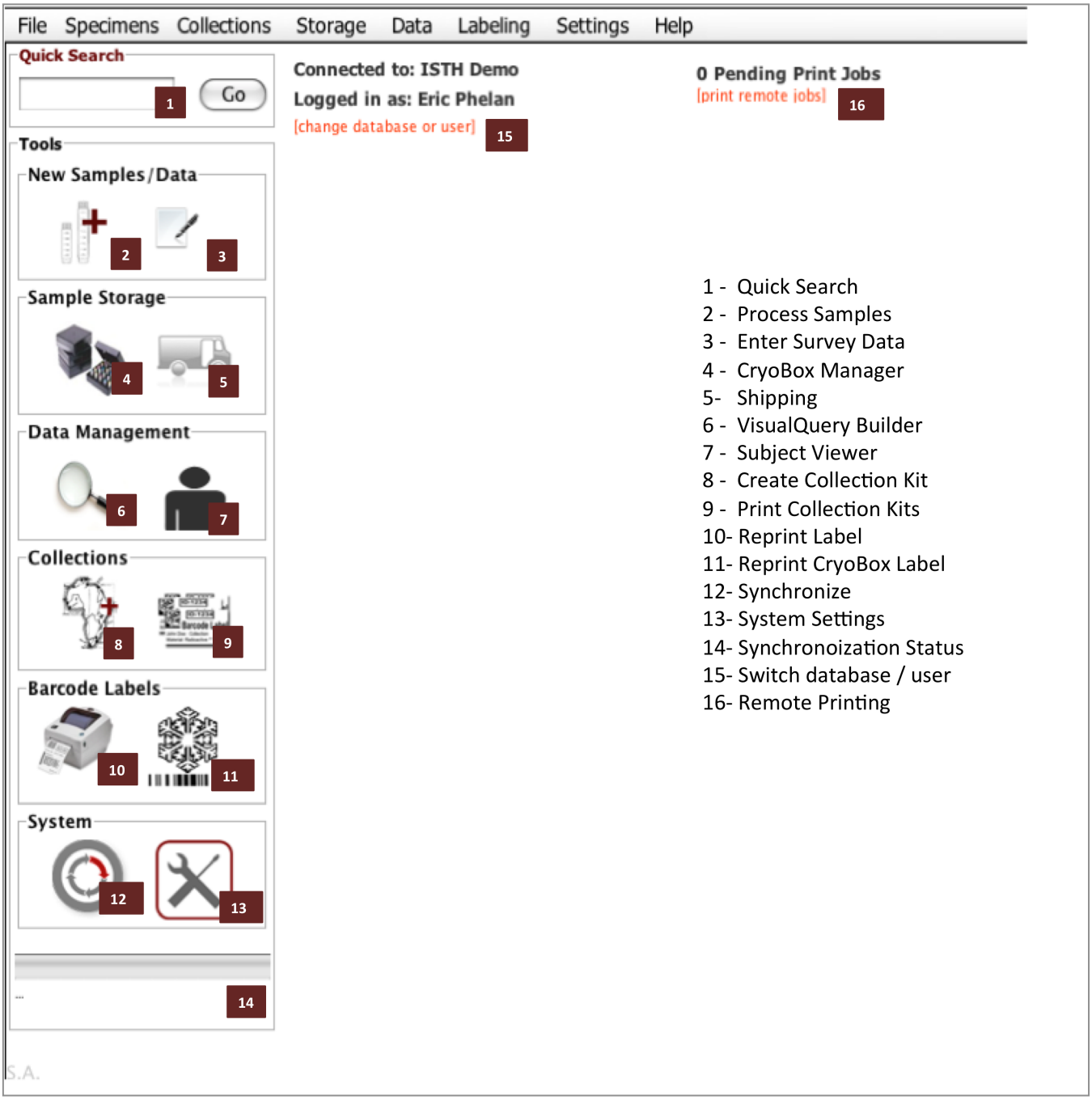


Figure – epiSampler Quick Menu and Desktop

Chapter 3
Creating Your First Project

3.1 Biological Specimens

3.1.1 Understanding a collection

Advice: Make sure you have read the first chapter before creating a project.

A Collection Kit automatically links all of the specimens and paper forms in the kit via a unique Collection ID. The first step in printing collection kits is to create a kit template. Collection kits can be printing on-demand once a template has been created. While you can edit a collection kit template at any time, it is important to put consideration into the requirements of your collection kit. Kit Labels will include the collection name as well as a sequential kit number. If planned in advance, the kit # can be made to correspond with subject identifiers. This is very helpful in keeping track of subjects and kits in the lab settings outside of epiSampler.

Consider this example: a study requires that there two collections for each subject. While each consists of the same number and type of materials, if we create only one template, the kit numbers will rapidly run out of synch with the any sequential subject identifiers. If, however, we create two templates, each with the same set of elements, but call one *Sample Study – Initial Collection* and the other *Sleepless Study - Follow up* then when we print the kits we will have:

Sample Study - Initial Collection| Kit # 1
Sample Study - Follow up | Kit # 1

Sample Study - Initial Collection| Kit # 2
Sample Study - Follow up | Kit # 2

This will be convenient if the Subject IDs take the form SUB-0001, SUB-0002, etc.

Tip: Not all labels and specimen IDs must be recorded in epiSampler. It may be useful to print extra labels to be used only in the lab setting to keep the various pieces together. For example, it might be worthwhile to label a vial for whole blood even if the sample with be centrifuged and the collection vial discarded. It may also be helpful to label a container for the kit elements, for example, a ziplock bag, consent forms and microscope slides.

3.1.2 Creating a Collection Kit

To create a new collection kit, click on the collection kit icon on the quick menu, or select it from *Menu: Collections->Create Collection Kit*

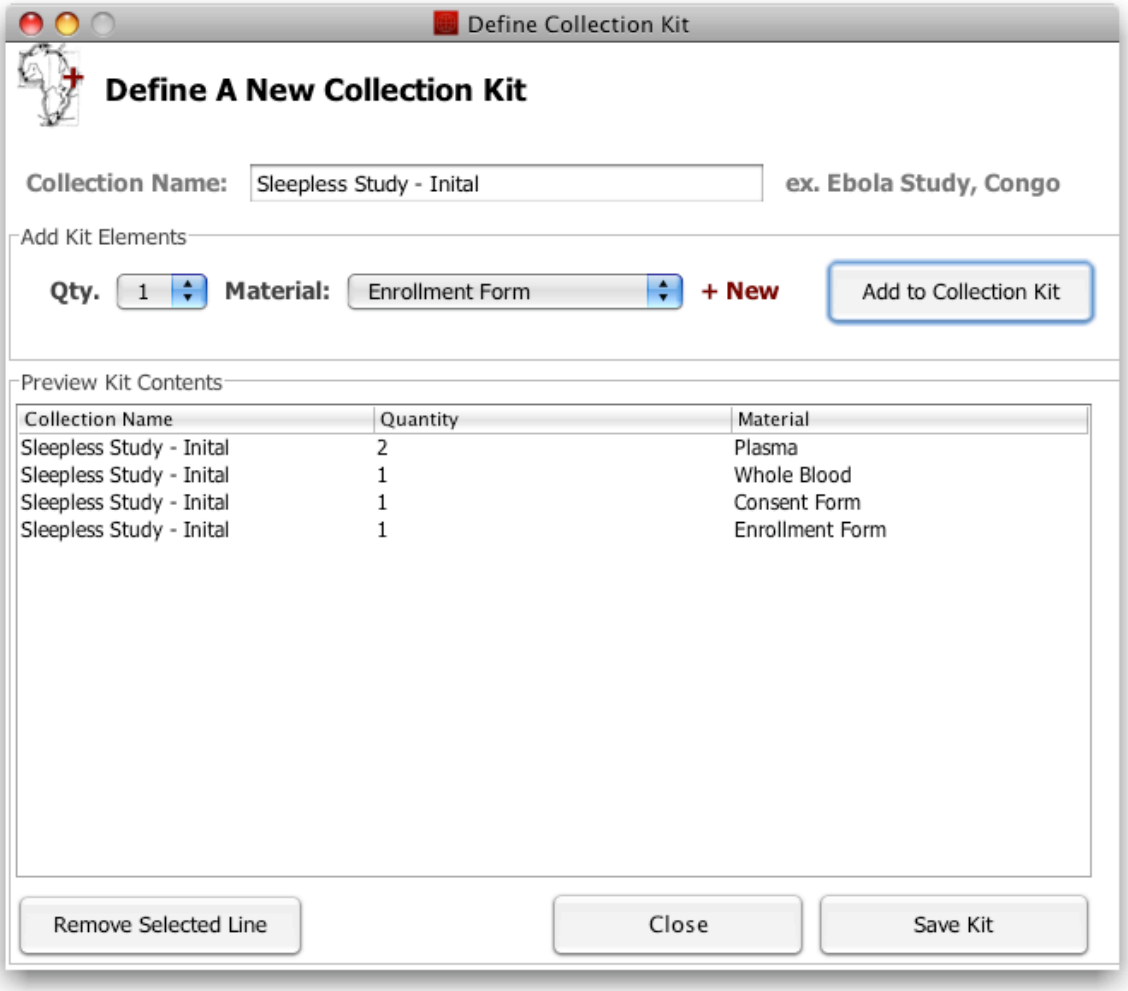


Figure 7 - Creating a New Collection Kit

Collection Name: The collection kit name will appear on all printed labels. It should be informative, but remember to keep it short enough to print: two to three words works best.

Adding Kit Elements to the Template: Select the number of similar elements – for example, two vials of Plasma - and the material, and click 'Add to Collection Kit'. To remove an element from the template, select the element in the preview list and press 'Remove Selected Line'.

Finishing Up: Once you have finished working with the template, press 'Save Kit'.

Note: You will be able to edit the template at any time.

FYI: A new epiSampler project will not include any material types. You can add a new material type from here by clicking 'New' next to the Material dropdown. You can also add or edit materials under *Menu: Settings -> Materials*

3.2 Data Forms

See Chapter 1 for a review of data structures in epiSampler.

epiSampler can be used to collect any type of study-related data, from subject demographics, to clinical data, to specimen-level assay results. Researchers can determine what to collect by creating data survey forms. Survey forms may contain any number of the following elements:

Input Type	Input Format	Validation Rules
Textfield	Short answers	Integer, Integer in Range, Number, Number in Range, Contains, Does Not Contain, In Database, Not in Database, Non-Blank
Date	Dates	Before, After, Date in Range
Textarea	Longer text answers	Contains, Does Not Contain, Non-Blank
Dropdown	Multiple options, one choice	None
Button Group	Multiple options, one choice	None
Checkboxes	Multiple options, many choices	None

3.2.1 Validation Rules Explained

Textfields, Textareas and Date Fields allow study staff to manually type in a response, while buttons, dropdowns and checkboxes allow only for the selection of pre-determined responses. Because manually entered data is more susceptible to human-error, a researcher can impose certain field-level validation rules on these form elements. Each element can employ up to two validation rules.

> **None:** No data checks will be performed, all responses, including non-responses, or blank data will be accepted.

Integer: The response must be an integer. Example: Question: Days since onset of fever. Acceptable Response: 5

Integer in range: The response must be an integer within a given range. The researcher will be able to determine the minimum and maximum acceptable values.

Non-Blank: Any response will be accepted, but the field cannot be left blank.

Number: The response must be a number. Example: Question: Weight in lbs: Acceptable Response: 156.4

Number in Range: The response must be a number within a range set by the researcher.

In Database: The form will query any table in the database to check if the entered response can be found in a specified table and column. The researcher must provide the table name and the variable name. These are best found using the VisualQuery Builder.

Not in Database: Like above, the form will query the database to see that the response does not already exist in a specified table and column. This is useful for ensuring the entered values are unique. The researcher must provide the table name and the variable name. These are best found using the VisualQuery Builder. See tip for preventing duplicate forms from being entered under tips for Subject IDs below.

Contains: The response must contain characters specified by the researcher. For example, if your study's Subject IDs always conform to a specific format, like SUB-0001, then you may want to require that for a field collection the Subject ID, the response contains 'SUB-'.

Does not Contain: Same as above, but requires the response does not contain the specified text.

3.2.2. Building Your First Form

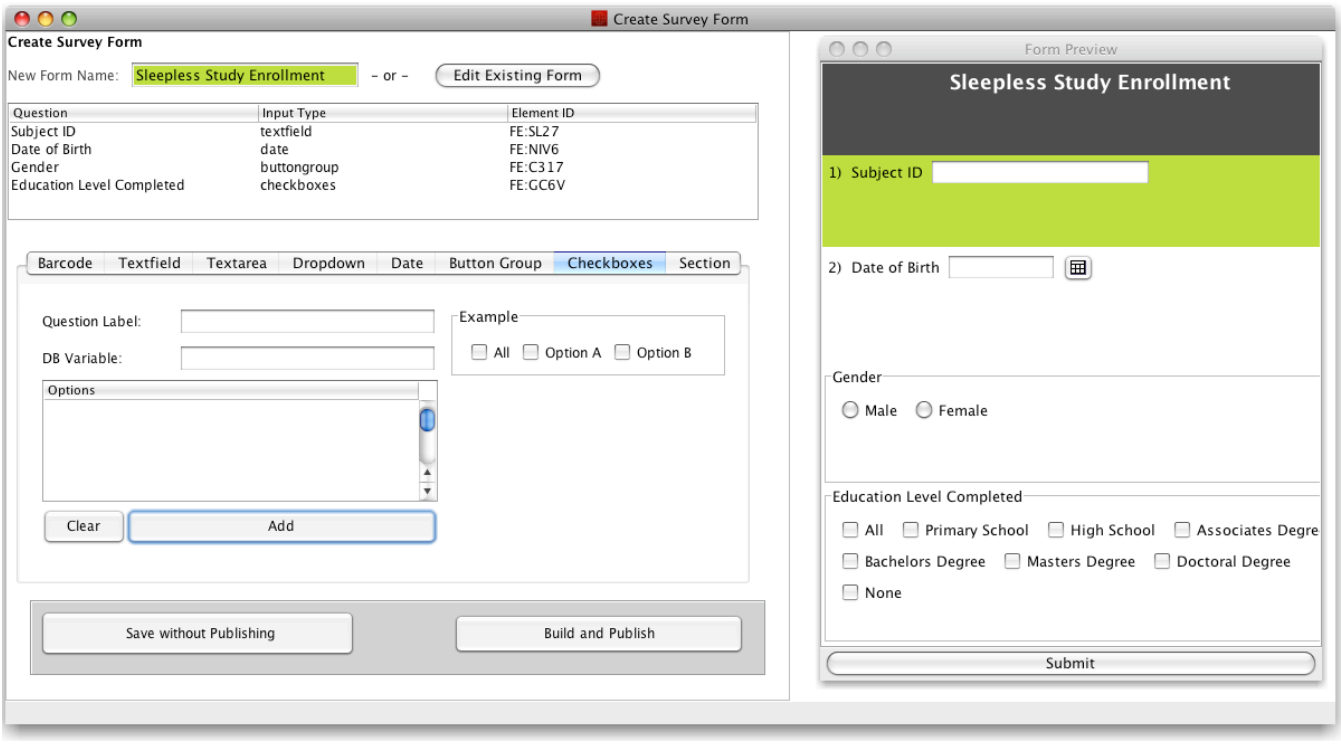


Figure 8 - Survey Form Builder

Naming your Form

Select a name that will be informative for your study staff. When opening the form to enter data, they will select from a list of all available forms.

Forms are presented in alphabetical order, so to ensure the study forms are presented in the order in which they are used, it may be worthwhile to number them. For example, 1- Study Enrollment Form, 2- Study Follow-up Data, 3- Study Closeout Form. You will select a name for the underlying data table when the form is published.

Adding Elements to the Survey Form

Select the element tab for the element type you would like to add.

Question Label

This describes the variable you wish to collection. Example: Date of Birth.

Variable

The question label will be automatically converted to a variable. If you would like to shorten the variable you may do so manually. Variables cannot contain spaces or special characters.

Textfield: Textfields are best used for short one or two word or number responses. Select any additional validation rules you would like to apply to the field, and provide any required parameters. Make sure the parameters are appropriate to the validation rule, or the responses will never pass validation. For example, if you are using 'Integer in Range' and provide 4 as the

minimum and 2 as the maximum, all responses will fail because no response can satisfy these requirements.

Textarea: Textareas are used for longer responses, typically a notes or description field. Textareas can also employ validation rules, but the types are limited as textareas are usually for optional or highly variable responses.

Dropdown: Dropdowns are the familiar lists you see on other software or internet forms. They provide the user with a list of options from which only one can be chosen. Example: A list of Age ranges a subject might belong to, Ethnicities, or Years of Experience.

Date: The date field looks like a textfield but also uses a graphical calendar for entering dates. Date fields have their own validation rules: before, after or date in range. The limits must be provided in the specified date format: dd/mm/yyyy. The 'Current Date' option, when selected, will always represent the date on which the form is being completed. If we were to use the 'before' validation rule, and selected 'Current Date', a user would be unable to select any date beyond the date on which they are entering data.

Button Group: Like a dropdown, a button group allows a user to select only one of any number of options. This is best used when the number of options is limited to 2 or 3. Example: gender.

Checkboxes: Checkboxes allow the user to select any number of choices from a provided list of options. When creating a list of options, the additional options all and none are added to the checkbox field. Selected options will be recorded in the data table separated by commas.

Section: A section divider, helpful in breaking the form into discreet sections.

After filling out the required information for any form type, press the 'Add' button. The form element will be added to the list of elements above, and added to the form preview on the right. The validation rules are now live and it is a good idea to test them on the preview before publishing the form.

Editing form elements To edit a form element, select it from the list of elements at the top of the form builder. Make any desired changes and press 'Save Changes'. If you press 'Add', and additional form element with the new information will be added to the form.

To delete a form element select it from the list of elements then right click on the list. Select delete from the menu.

To move an element up or down on the form, select it from the list of elements and right click on the list. Select move up or move down from the menu.

Critical!! The first field on your form: Remember, the data form is a graphical user interface for the underlying data table. In order for the data on this form to be linked by epiSampler to other project data, **the first field must be a Subject ID, Collection ID or Specimen ID.**

Saving a Form without Publishing
You may save a survey form without publishing it. The survey form will be available for editing over the network. This is a great option when collaboratively developing a project. DO NOT simultaneously make edits to a survey form. Only the most recently edits will apply, but corruption of the form and underlying table are possible.

Build and Publish the Survey Form
When you are done building the survey form, press Build and Publish. You will be asked give the underlying data table a nickname. Remember that this is the name you will use when querying the data, and looking up data tables. epiSampler will generate an internal table name that conforms to certain standards. After naming the form press 'Compile and Publish'.

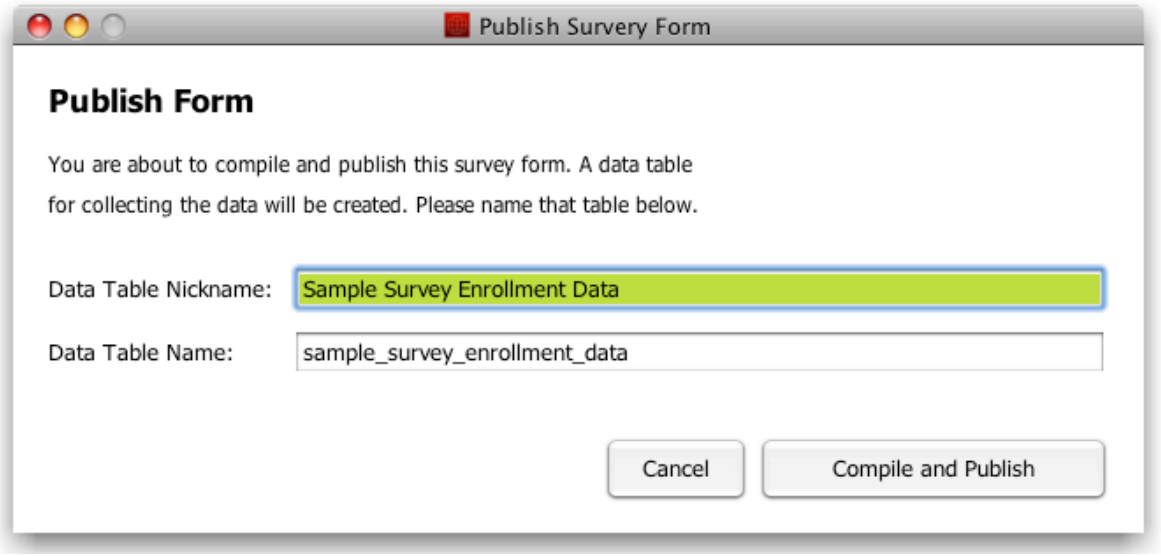


Figure 9 - Publish Survey Form

Notice: You are able to edit survey forms at any time. However, doing so often means altering the underlying database structure not only on your computer but across the network. While epiSampler anticipates this, the more modifications made to a form and table, the higher the chances of error. **Please review survey forms multiple times before publishing a form.**

Editing a Survey Form
To edit a survey form, click 'Edit' on the Survey Form Builder, or open from *Menu: Data -> Data Collection -> Edit Survey Form*

You may make edits to fields, and add additional fields to a form just as you would if you were creating it for the first time.

Things to Consider
Deleting a Form Field. You can delete a field from the form, but the associated variable in the underlying data table will not be removed. In the future when forms are submitted, the associated field will be left blank.

Adding Fields to a Form
You may add new fields to a form at any time. The underlying table will be expanded to include the new variable. All previous records for which this variable was not collected will be blank. You will be able to enter this information manually.

Variable names for existing fields cannot be changed. While you may change the question as it appears on the form, the underlying variable name will not change. If it is a subtle change, or grammatical correction, this should not pose an issue. For more substantive changes, consider deleting the original form field and adding a replacement.

Remember: editing forms also means making significant alterations to the underlying database, not only on your computer, but on the server as well as every other networked computer. It is highly recommended that you make as few changes as possible, and when making changes that include adding or removing variables, you double check the preview before publishing the changes.

To Barcode or Not To Barcode.
From the barcode tab you can select whether or not this form is barcoded. If you select yes, the first field of the underlying table will be Collection ID. The published form will contain a field at the top asking the user to scan the barcode. The form will automatically convert the barcode into a Collection ID and record it in the table. This is preferable to manually asking a user to enter a Collection ID.

Barcoding a survey form cannot be undone after publishing.

Tips:
→ If the first field is Subject ID:

1) Consider using the 'Contains' validation rule if your subject ids have a consistent format. Ex: SUB, ID, etc
2) Consider using the 'Not in Database' validation rule to ensure that the form data is entered only once. Since the underlying table is not yet created, you will have to make a decision now on what you will name it. If you name your form Study Enrollment Form, your underlying table could be named Study Enrollment Data. When you name a form, the form is given a nickname, like the one we just decided on, as well as a technical name which epiSampler uses internally. Internal table names are always all lower case, spaces are replaced with '_', and no special characters, like $ % & are permitted. Thus, our data table name would be study_enrollment_data. The column name is always upper case. Spaces are replaced with '_' and no special characters are allowed. Therefore the field Subject ID will always be represented as SUBJECT_ID in epiSampler tables.

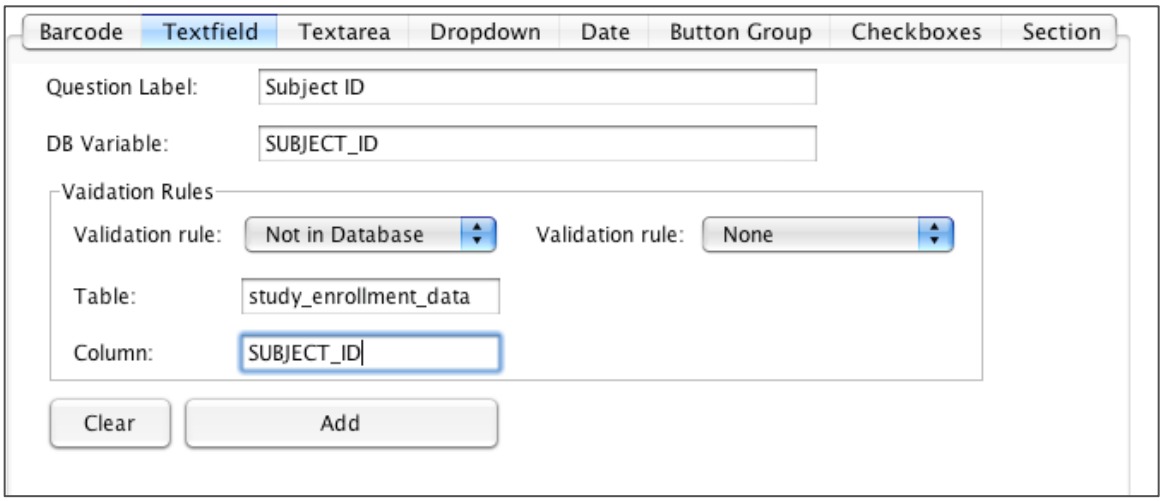


Figure 10 - Adding a Subject ID validation

→ If the first field is Specimen ID:

Consider checking that the Specimen ID was created by epiSampler by using the "In Database" validation rule. Every label created by epiSampler is recorded in a table called 'sample_kits'. The first field of this table is SPECIMEN_ID and the second is COLLECTION_ID. Like above, you can set the validation rule to query this table and check if the record exists. If epiSampler created the Specimen ID it will be found in this table. Otherwise it is likely the user has made an error entering the specimen. This sort of validation will make sure that all of the data can be linked together later on.

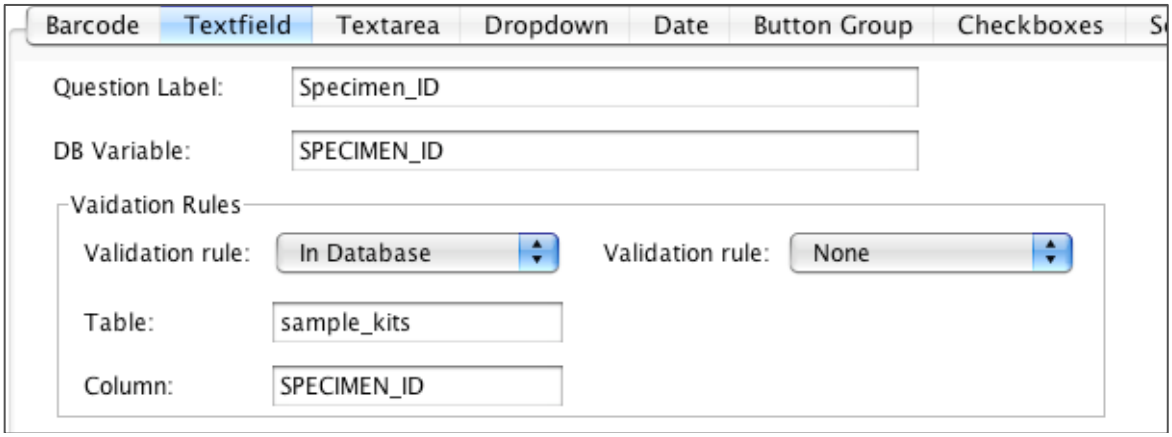
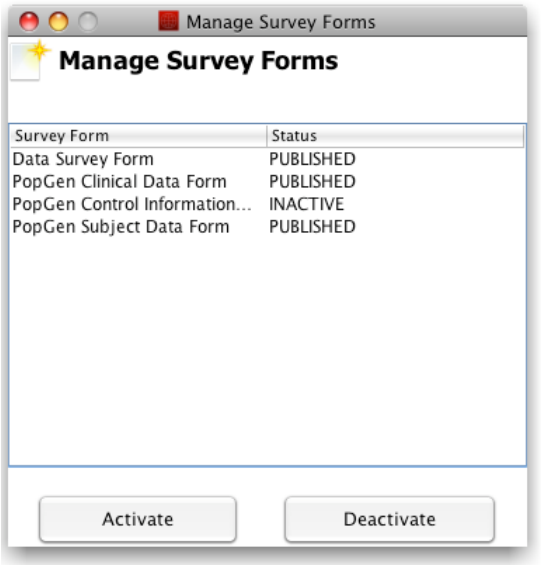


Figure 11 - Adding a Textfield

3.2.3 Managing Published Survey Forms



Survey forms cannot be deleted. This decision was made during development to limit the possibility of accidentally deleting data. Instead, forms can be made 'Active' or 'Inactive'. Active forms appear in the list of Survey Forms available for data entry. Inactive forms and the underlying data are maintained for the life of the project and can be re-activated and edited at any time.

To manage survey forms navigate to *Menu: Data -> Data Collection -> Manage Forms*

Select the Survey Form you wish to manage, and click either Activate or Deactivate.

Chapter 4
Running A Study

4.1 Printing Collection Kits

Open the Collection Kit Printing tool by either clicking the Kits Label on the Quick Menu or from *Menu: Specimens->New->Labels*

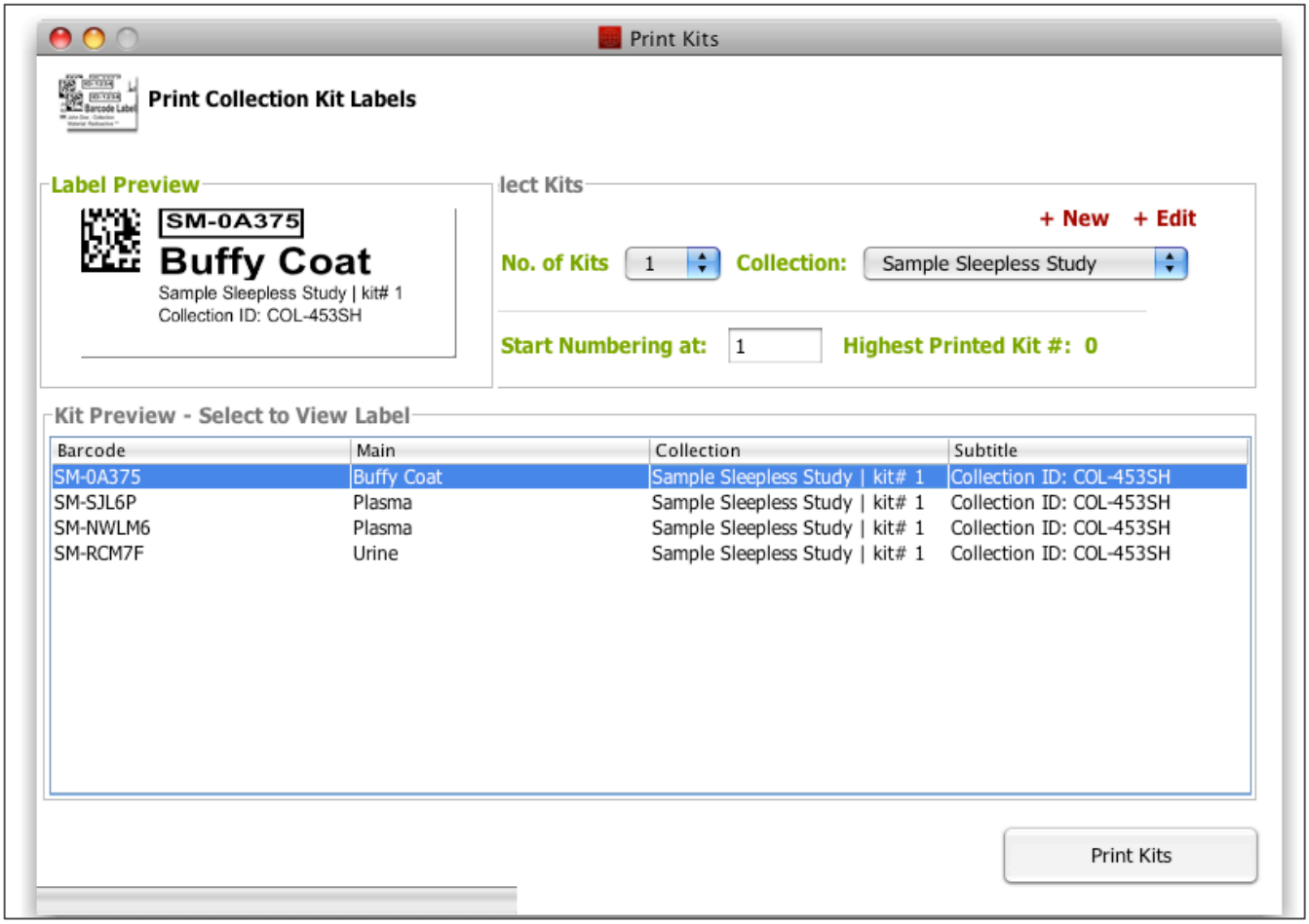


Figure 12 - Printing Collection Kits

Select the collection kit template from the dropdown and enter the number of kits you wish to print. Collection kit labels are printed with a sequential kit # identifier. The last highest kit # is shown under the collection template dropdown.

You may print any kit # higher than the highest printed kit #. In order to avoid creating duplicate numbered kits with different collection IDs, epiSampler will not print collection kits with numbers smaller than this.

If you select a starting number smaller than the last highest printed kit number, you will be prompted to reprint the kit. If the kit was never printed because you started printing at an arbitrarily high #, you will not be able to print kits below this starting point.

You may preview the labels by selecting the label of interest from the preview table. Only one collection kit is shown in the preview regardless of the number of kits you intend to print.

When you have finished preparing the collection kits, press the 'Print Kits' buttons.

A Note on Remote Printing If you have set up remote printing, a remote printing dialog will appear any time you attempt to print a label. Enter a name for the print job. This will help you identify it on the destination computer's remote printing print queue.

4.2 Reprinting Labels.

4.2.1 Individual Labels

Open with *Menu: Labeling->Reprint Labels ->Single Label.* You may reprint single labels if you know the Specimen ID. Enter the Specimen ID and press 'Reprint'.

4.2.2 Collection Kits

You may reprint entire kits or portion of collection kits using the kit reprinting tool found under *Menu: Labeling->Reprint Labels ->Collection Kit*

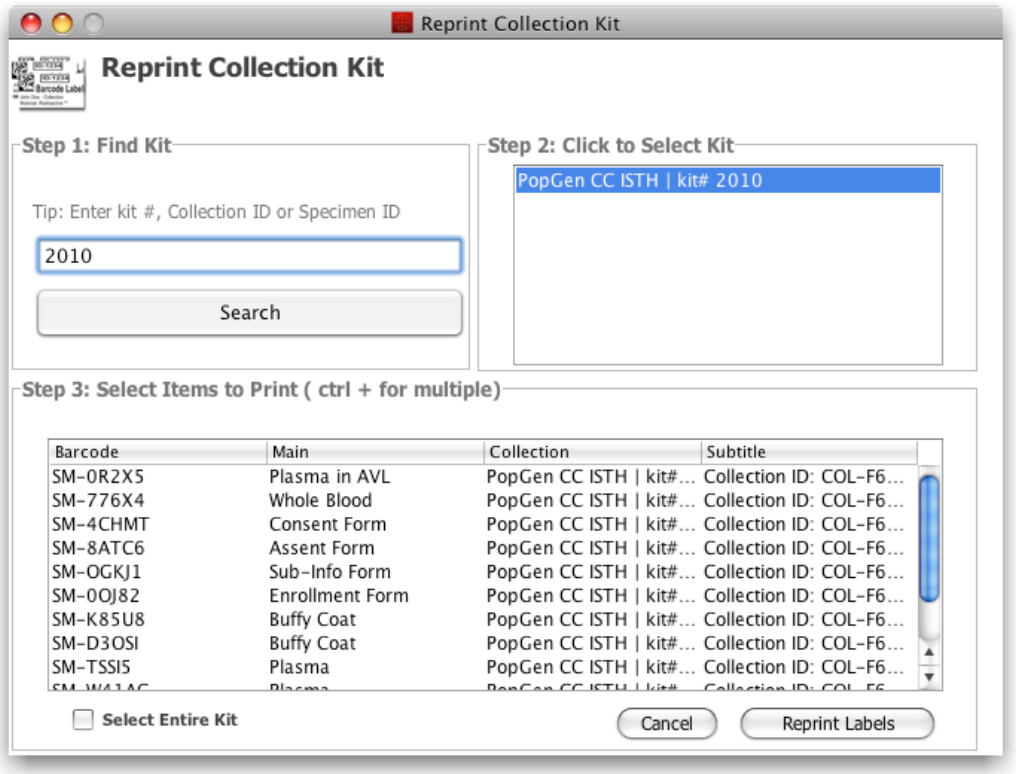


Figure 13 - Reprinting Collection Kits

Enter either a kit number, as shown above, Specimen ID or Collection ID in the search field. All matching kits will be displayed in the list to the right. Select the desired kit and the elements will be

displayed below. You may select individual elements to reprint, or you may select the entire kit by checking the 'Select Entire Kit' checkbox. Press ' Reprint Labels' to print.

4.3 Labeling Derived Specimens

Understanding: 'Derived specimens' refer to any specimen material that does not come directly from the activity of an initial collection. For example, when whole blood is separated and aliquoted into plasma, the plasma is considered a primary specimen; it was initially part of the collection kit, and was created at the time of collection. If two weeks later you were to aliquot some of the plasma into a second vial, and wanted to record the information in epiSampler, the second vial would be considered a derived sampl eand it's parent specimen the original vial of plasma. In this way, additional aliquots or products (cDNA, RNA, etc) can be linked to a specimen, collection and subject.

You can create labels for derived materials by *Menu: Specimens -> Derived ->Labels*

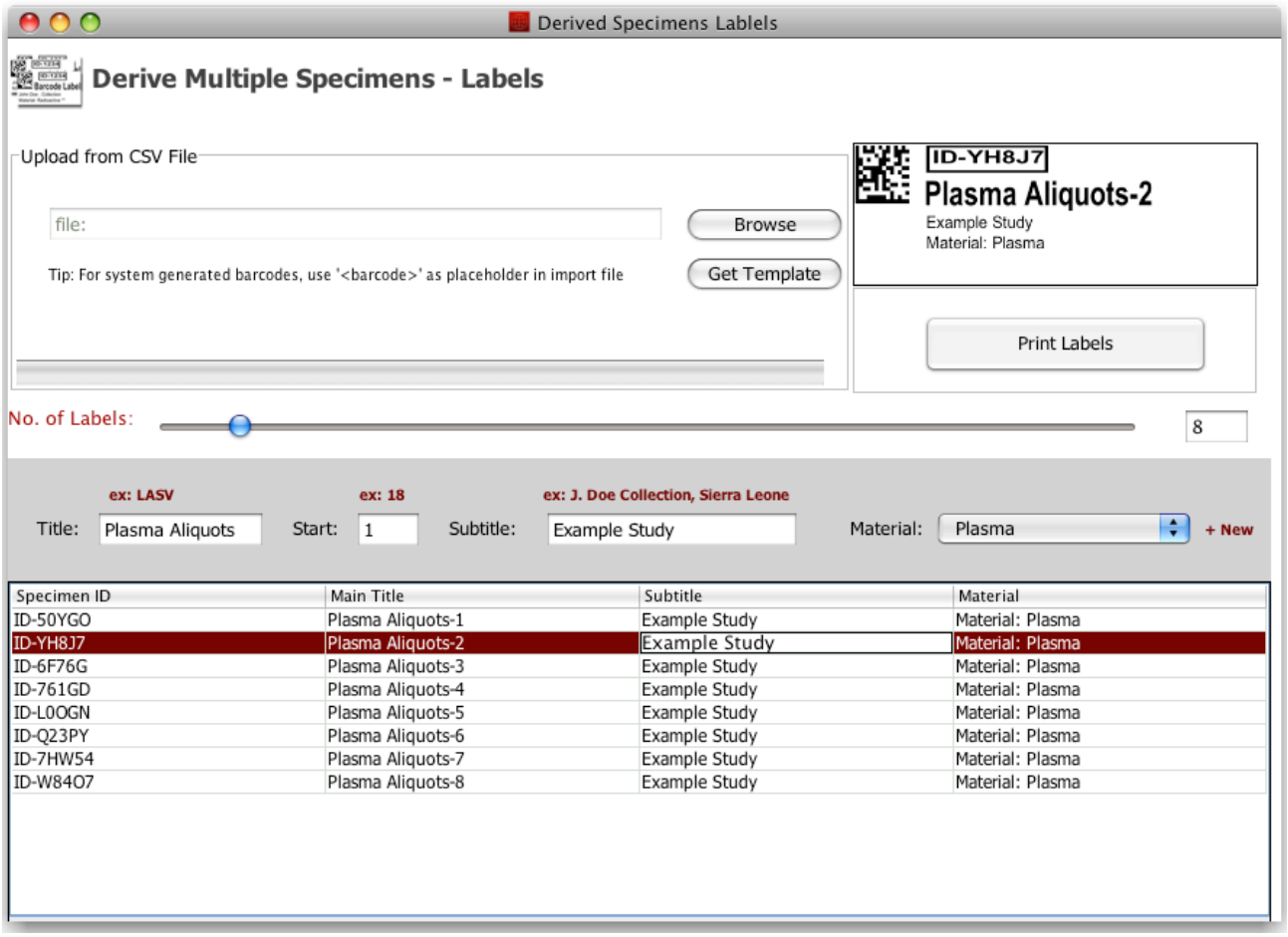


Figure 14 - Derived Specimen Labeling

Creating Labels

Enter a descriptive title in the title field and a starting number in the start field. Label titles will be generated with sequential numbering in the form Title-Number. For example: Plasma Aliquot - 1,

Plasma Aliquot -2, etc. Enter any addition information as a subtitle and select the material from the dropdown menu.

Drag the slider from left to right to generate more or fewer labels. You can also enter the exact number of labels in the field to the right of the slider.

Uploading Labels
You can create labels in a spreadsheet program, such as excel, and upload them to epiSampler for printing. To get started, download a template by pressing the 'Get Template' button.

You can have epiSampler generate unique specimen IDs by using '<barcode> ' as a placeholder in your spreadsheet file. When you upload the file, epiSampler will replace the placeholders with unique IDs.

To upload a table of barcodes, browse for the file on your computer by pressing the 'browse' button. Select the file to upload. If the file can be imported you will see a list of the labels in the table. Select a label to see a preview image.

You will have the option to record information on the specimens immediately using the Bulk Processing tool.

Preview and Print
Preview a label by clicking on a row in the table of labels. To print the labels press the 'Print Labels' button.

4.4 Recording Specimen Information

4.4.1 Sample processing: one at a time.

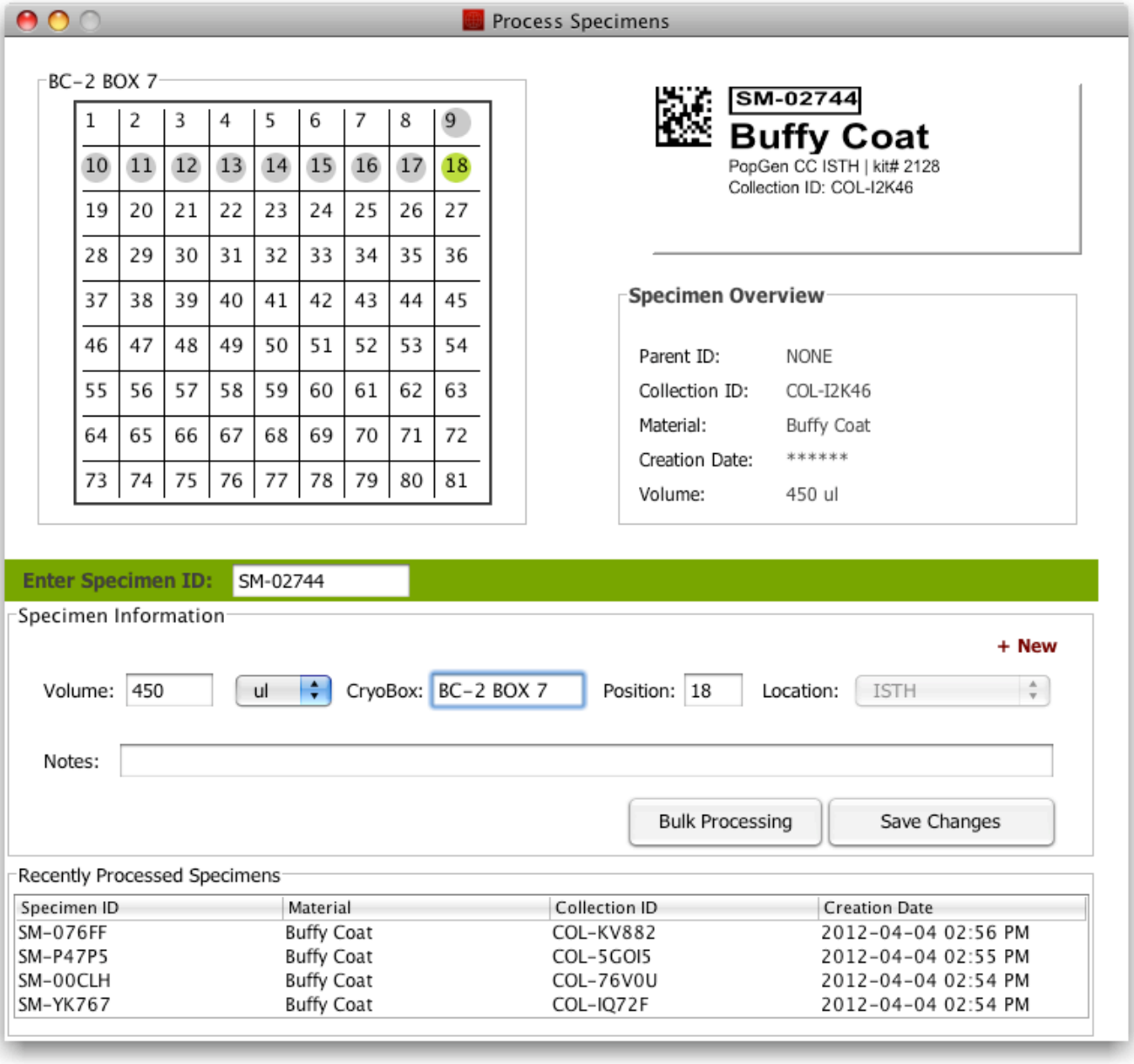


Figure 15 - Processing Samples

Processing a Sample
Sample Processing refers to the process of recording basic information about the sample volume and storage information in epiSampler

To start, **scan a specimen barcode** into the field labeled 'Enter Specimen ID'. epiSampler will automatically load any information it has about the specimen and display it in the 'Specimen Overview' box.

Enter the **sample volume** (or weight) and select the volume units.

Enter the **CryoBox ID.** If you have already created a box then scan the barcode on the cryobox. If you enter a new CryoBox ID you will be prompted to fill out basic information about the box and able to print a label upon saving. epiSampler will display the contents of the selected box in the diagram on the upper left.

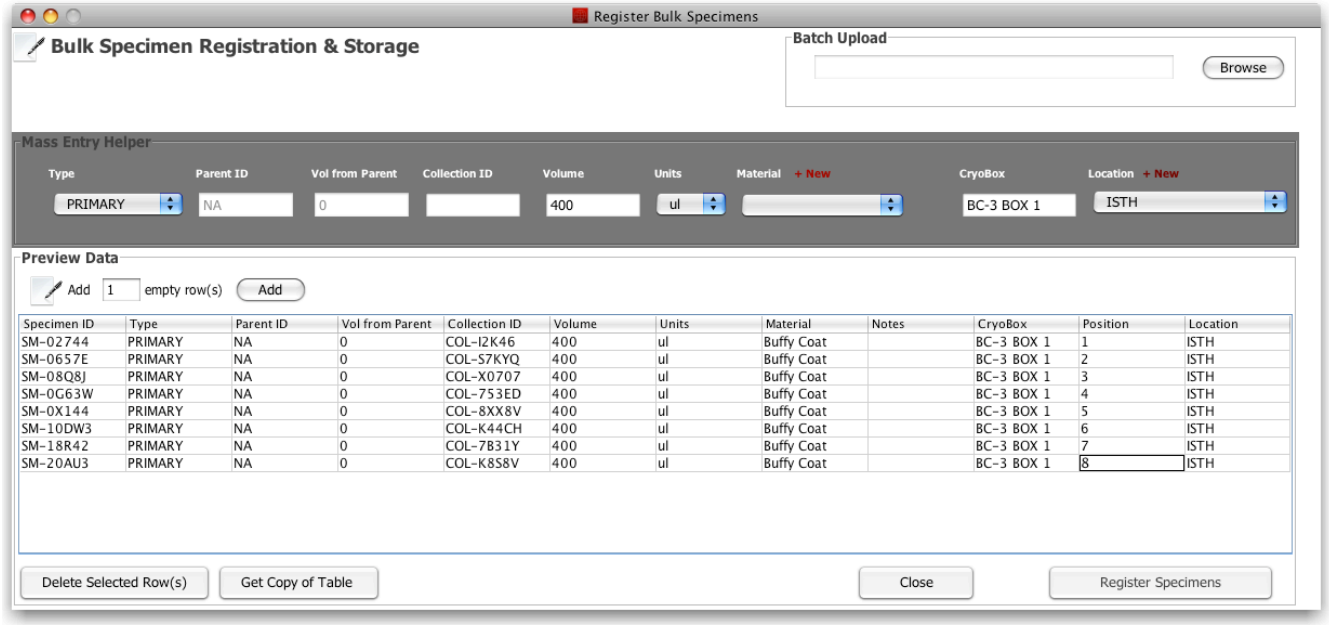
To select a storage **position**, click on an open position on the CryoBox diagram, or type the position in the position field. If there are other specimens in the box, the location dropdown will be disabled, as all specimens in the same box must be in the same lab.

Add any other applicable **notes** and press the 'Save Changes' button.

Correcting Errors or Making Changes
The last four processed specimens are listed at the bottom of the Sample Processing window. The specimen you just recorded will be at the top of this list. Click on the specimen to reload the information. You may make any changes or corrections and press 'Save Changes'. If the specimen is no longer listed below, you can scan the specimen barcode again and epiSampler will load the information for editing.

4.4.2 Entering Specimen Information in Bulk.

When you print collection kits you are asked if you would like to process the specimens in bulk. Selecting yes will open the following window. You can also reach bulk specimen processing by clicking on Bulk Processing on the Single Sample Processing Window.



The table can be used to enter information on more than one specimen at a time.

Working in Excel
A copy of the table can be downloaded as .csv format by clicking 'Get Copy of Table'. You can then work with the table on your own in excel or another spreadsheet program. To load the data browse for the file with the 'Batch Upload' tool in the upper right corner of the window. You may leave the Collection ID field blank in the .csv file. The Collection IDs will be automatically added for any Specimen ID that was created by epiSampler.

The Mass Entry Helper makes it easier to fill out the table. Values entered in the helper will be filled into all rows on the table. In addition you can individually enter values into each table cell.

Specimen Type

> *Primary Specimens* are specimens that were collected as part of an epiSampler Collection Kit. They can be identified as having specimen IDs that begin with SM.
>
> *Derived Specimens* are specimens that are either aliquots from a primary specimen, or products from laboratory procedures, for example cDNA or RNA extraction. Derived specimens can have any ID, but typically they begin with ID- if created by epiSampler.

Parent ID and Volume from Parent

> These two fields apply to derived specimens only. (See section above on Derived Specimens). In order for derived specimens to be linked to other collection data, they must have a parent specimen. Entering a parent specimen in the table will allow epiSampler to identify the collection to which the specimen belongs. Enter the volume used or taken from the parent specimen in the Vol from Parent. This will adjust the current volume of the parent specimen.

To add empty rows to the table, enter the number of empty rows you would like to add directly under the mass entry helper. Press the 'Add' button.

To delete a row, select a cell in the target row and press the 'Delete Selected Row(s)' button.

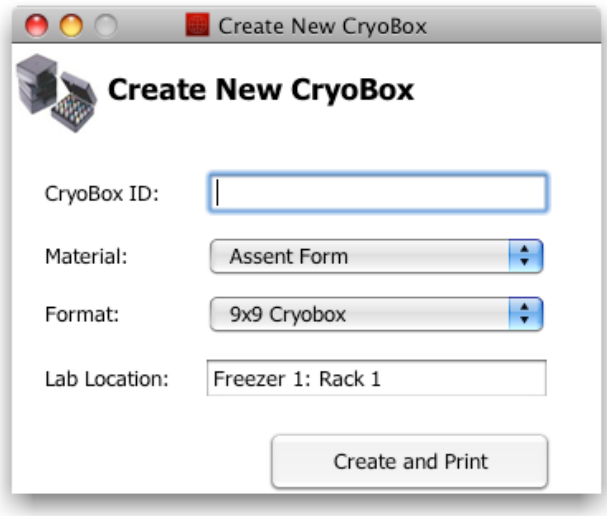
Completing Registration
When the table has been completely filled out, press 'Register Specimens'. epiSampler will check for any missing data and register all error free records. If you have stored specimens in a cryobox that has not yet been created, you will be prompted to fill out basic information about the box, and will be able to print a label.

4.5 Managing Sample Storage

One of the main strength of epiSampler is the tracking and management of biological specimens. There are multiple tools to this end.

4.5.1 Creating a CryoBox.

epiSampler sampler currently supports three common containers for sample storage. 9x9, 10x10 well cryogenic freezer boxes and 96-well plates.



The CryoBox creation dialog can be accessed from many convenience points throughout the program. To access it directly: *Menu: Storage-> Create New CryoBox*

CryoBox ID
Enter a new CryoBox ID of your choosing. We suggest something short but informative. *Example: PLASMA – BOX 1.*

Format
Select the appropriate format from the dropdown.

Material
Select the material the box will mostly contain as well as the box format.

Lab Location
Where will you store the box? The more specific you are, the more helpful epiSampler will be in helping your locate your samples. Options include: LN2 Tank 1, Rack 1-1 or Freezer 2, Shelf 3, Rack 1, etc.

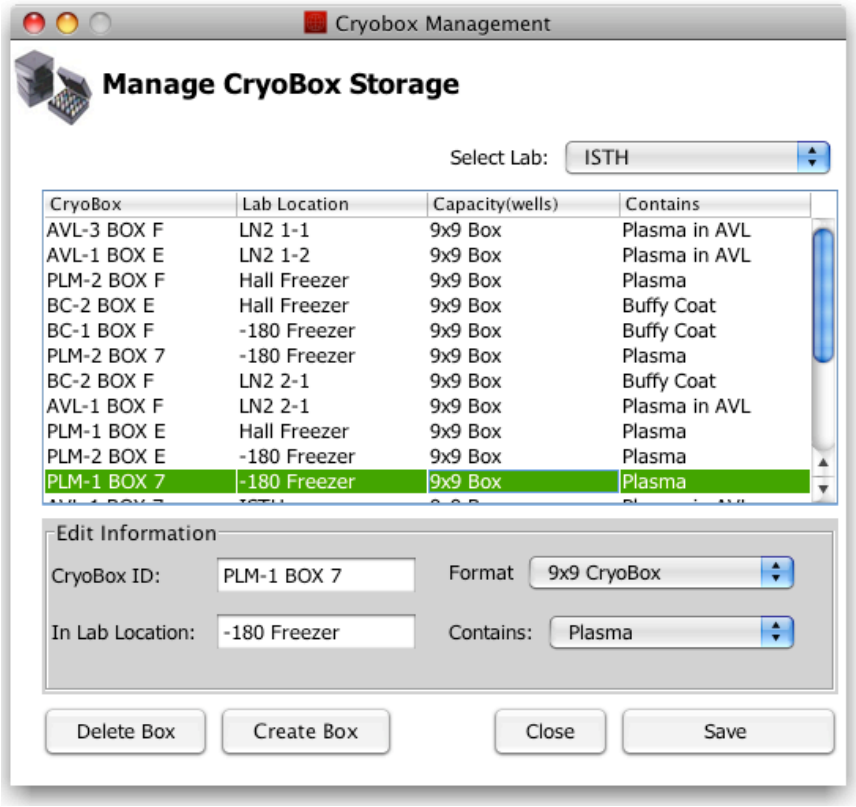
When finished, press the 'Create and Print' button.

4.5.2 Reprinting CryoBox Labels

You can reprint a CryoBox label from *Menu: Labeling->Reprint Labels->CryoBox Label*
Select the CryoBox from the dropdown menu and press Print.

4.5.3 CryoBox Management

The better organized your CryoBoxes, the easier it will be to find specimens later. You can update the storage location, as well as the content material, format and ID of any CryoBox using the Cryobox Management Tool. To make changes, select a CryoBox from the list. Make the desired changes in the 'Edit Information' pane. Press the 'Save' button to save your changes.

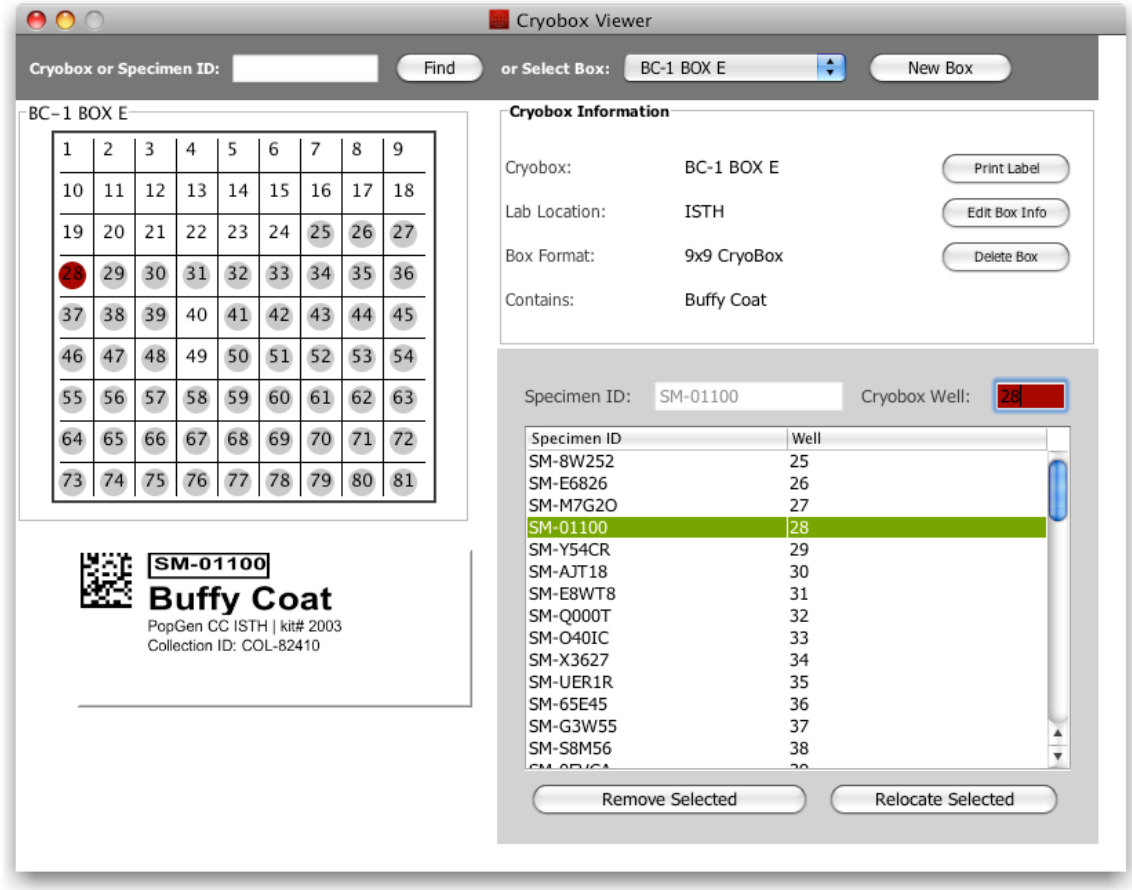


Deleting a CryoBox
Only empty CryoBoxes can be deleted. To delete a CryoBox, remove all of the specimens by using either

the CryoBox Viewer or by manually changing the storage information. Once the box is empty you can select it either here or under CryoBox Viewer and press the 'Delete Box' button.

Changing a CryoBox Name
Select the box you wish to rename from the list. Enter a new CryoBox ID in the field, and press 'Save'. If the CryoBox ID is already in use, the field will turn red and you will not be able to save the new name. After pressing save you will have the option to print a new label with the updated ID.

4.5.4 CryoBox Viewer



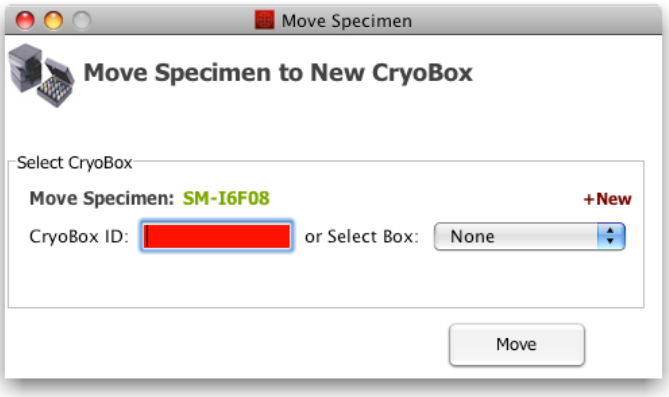
Searching
You can search the CryoBox viewer either by entering or scanning a Specimen ID or CryoBox ID in the search box in the upper left, and pressing 'Find'. If you want to inspect the contents of an entire box, then you may also select the box from the dropdown.

Navigate the box by clicking on the locations of interest in the box diagram, or by selecting the specimen of interest in the list to the right.

Moving a specimen

→ To a new position within the same box

Move a specimen by first selecting it – either by clicking on it in the diagram, or selecting it in the list. The selected specimen will be highlighted in the list and marked in red on the diagram. Select a new position for the specimen by clicking on an open well on the diagram, or by manually typing the new position in the field labeled 'Cryobox Well'



→ To a new box

Move a specimen by first selecting it – either by clicking on it in the diagram, or selecting it in the list. Click 'Relocate Selected'. Select a new CryoBox in the dialog. Press 'Move' .

The CryoBox viewer will load the new CryoBox. The Specimen has been added to the box, but the well position is set to 0. Select the specimen and assign it to a well.

Removing a Specimen

Removing a specimen only removes the storage information. New storage information can be added using the Sample Processing tool, or by manually editing the data. Remove a specimen by first selecting it – either by clicking on it in the diagram, or selecting it in the list. Click 'Remove Selected'. You will be prompted to confirm the removal.

Deleting a Specimen

You can permanently delete a specimen and all associated data by selecting a specimen in the list, then right clicking. Select Delete from the popup menu. You will be lead through a multi-part process to confirm deletion of the specimen.

Find More Information on a Specimen

You can launch a full search on a specimen from the CryoBox Viewer by first selecting the specimen in the specimens list. Right click, and select 'Lookup Specimen'. This will launch the Subject Viewer, which will show all known information on this specimen, all related specimens, all collection and subject level data.

Print Cryobox Label

You can reprint a CryoBox label from the CryoBox Viewer by pressing 'Print Label' in the CryoBox Information Pane.

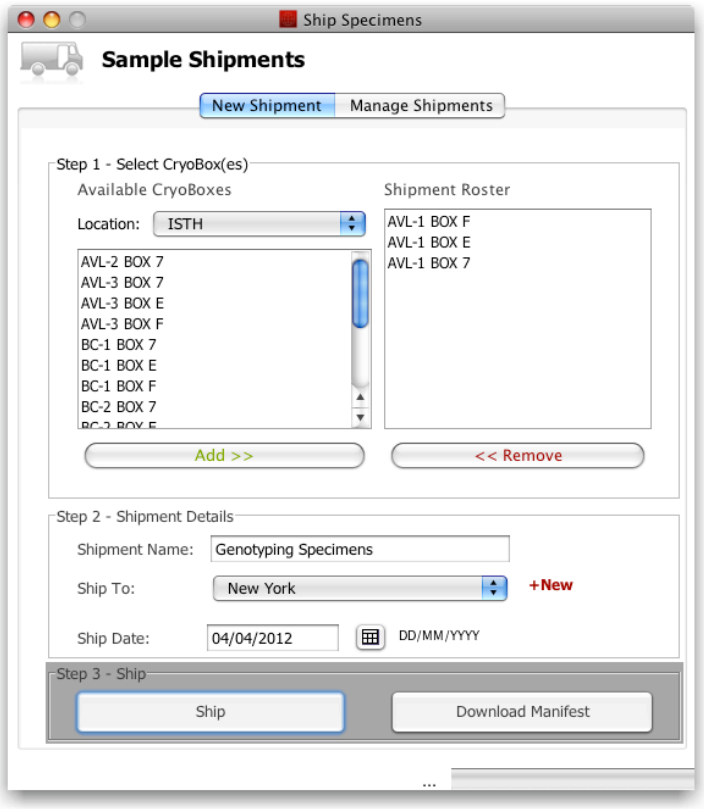
Edit Box Info

You can edit the CryoBox information by clicking the 'Edit Box Info' button. This will launch the CryoBox Management Tool.

Delete Box
You can delete a CryoBox only when it is empty. You must first reassign the contents to other storage locations. Once the box is empty, press the 'Delete Box' button to permanently remove the box.

4.6 Shipping Specimens

epiSampler was designed for projects spanning multiple research sites. As such, epiSampler allows for the easy creation and management of specimen shipments. When specimens are shipped using epiSampler, the storage location is updated to the new location. Additionally, a shipping manifest can be easily downloaded and included in international specimen shipments.



4.6.1 Creating a Shipment

Step 1) Select the shipment origination location from the dropdown menu, then select the boxes to be shipped from the table of CryoBoxes on the left. Press the 'Add' button to add the boxes to the shipment roster.

Step 2) Provide a name for tracking the shipment, a destination location, or add a new location to epiSampler, and select a shipment date.

Step 3) Press the 'Ship' Button

Once the specimens have been shipped, their locations are updated to 'In Transit'. Shipments must be 'received' in order to reflect their new locations.

Downloading a manifest
After you have added the boxes to be shipped to the shipping roster you may download a csv file containing a list of the specimen IDs, the corresponding materials and box/well locations by pressing the 'Download Manifest' button.

Receiving a Shipment
Ideally you are shipping the specimens to another lab on your epiSampler network: if so, staff in your other location will be able to receive the specimens in epiSampler. Otherwise you may mark the shipment received.

Select the Manage Shipments Tab. All shipments currently in transit are displayed in the list of shipments. Select the shipment you wish to receive and add any additional notes in the notes box. Press the 'Receive' button to receive the shipment. Receiving the shipment will update the storage location of all specimens to reflect the recipient's location.

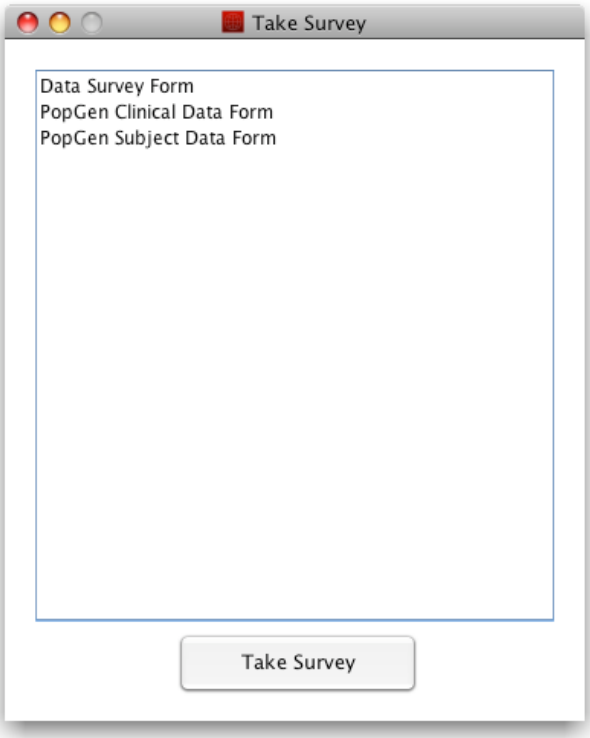
Cancel Shipment
If you need to cancel or edit a shipment, select the shipment and press the 'Cancel' button. No record of the shipment will be made, and the specimen locations will revert to the original values.

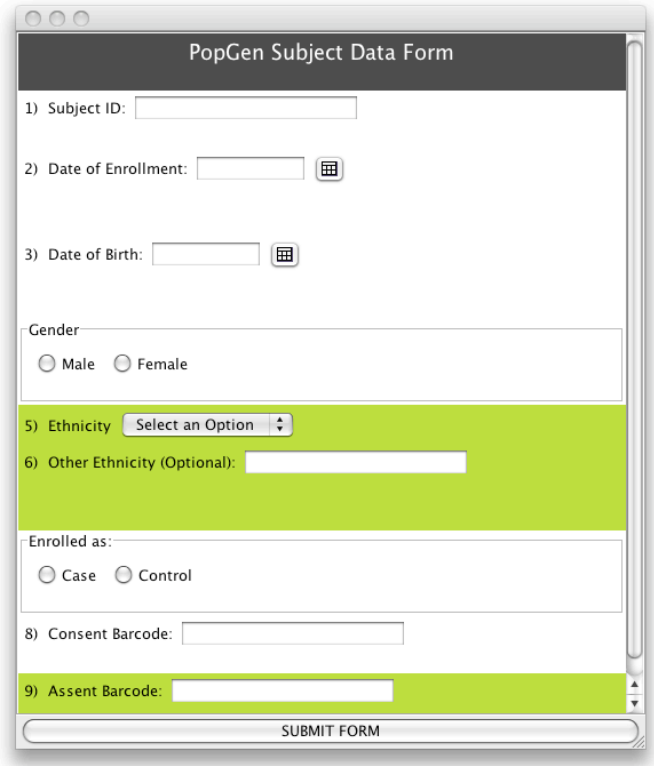
4.7 Recording Survey Data

4.7.1 Entering Study Data in Survey Forms.

Click on the 'Data Entry' icon on the Quick Menu to launch the list of live survey forms. Select the form you wish to fill out and click 'Take Survey'

The Survey Form launches within the epiSampler desktop. Fields that have already passed validation will be green.





Begin filling out the form as per the instructions. Must fields are validated once you have moved on to the next question. If the data is valid, the field will turn green, otherwise you will be given notice as to the error.

Only an entirely valid form will be able to be submitted.

ress the 'SUBMIT FORM' button at the bottom of the form to record the data.

4.7.2 Uploading Data in Bulk

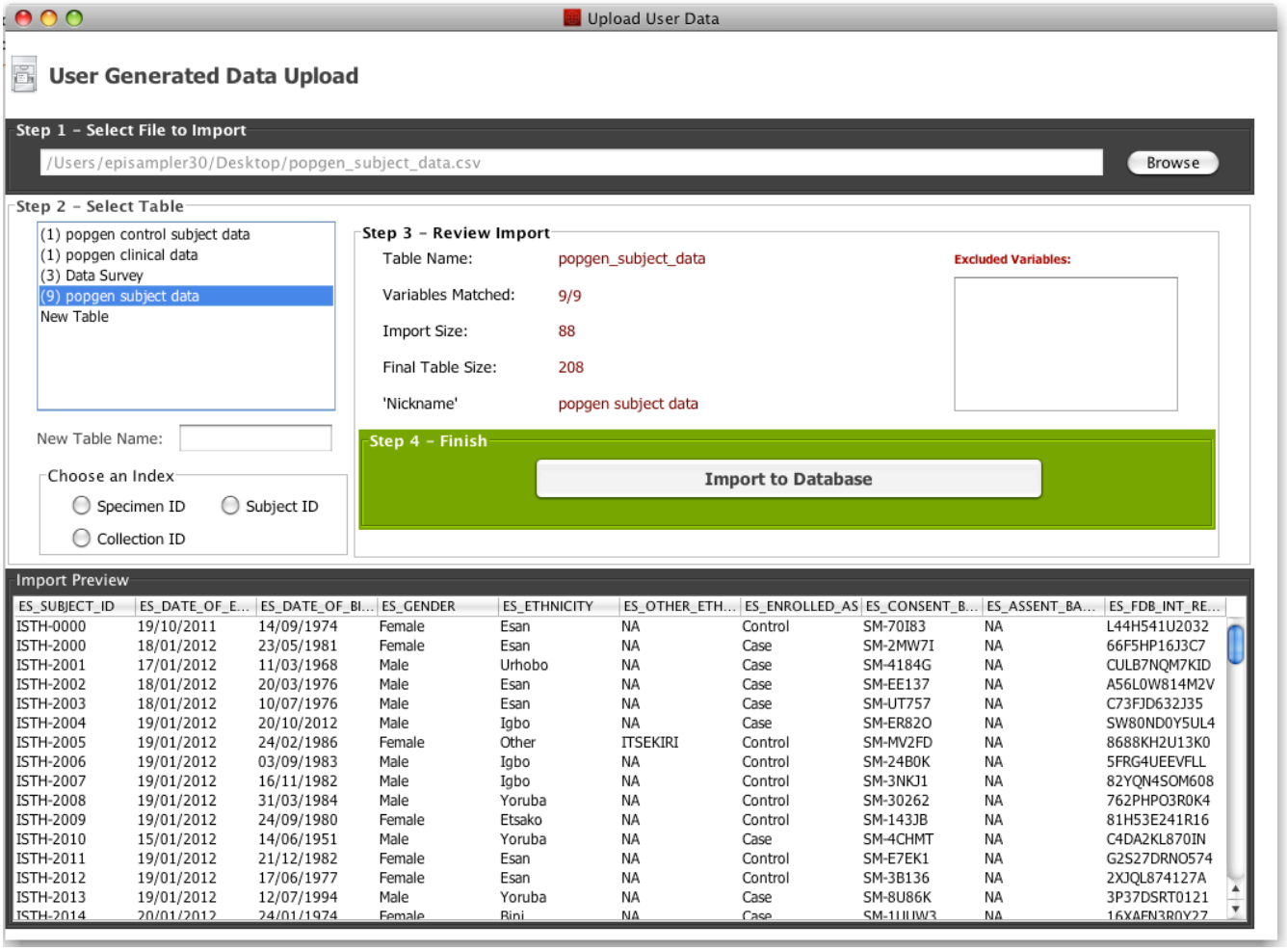
Data can be uploaded in bulk to any one table, combination of appropriate tables, or by creating a new table.

Step 1) Select the file of data you wish to upload. The data must be in comma-delimited format and must contain column headers. Once the table is loaded, epiSampler will attempt to match the variables against existing database table variables. If you know in advance which table you wish to import to, it might be worth getting a copy of the headers from the database table viewer.

Step 2) A list of tables matched in epiSampler will be displayed on the left side along with the number of matching columns in parentheses. Select the table you wish to import to or select New Table to generate a preview of the import. A summary of the import is displayed in the 'Review Import' Pane, including a list of variables that will not be matched, if any, in the 'Excluded Variables' list.

If you wish to create a new database table, rather than importing to an existing table, select New Table. epiSampler will attempt to identify if the index column is a Specimen, Collection or Subject ID. If epiSampler cannot make a determination, select the appropriate index type. You will also need to give the table a name.

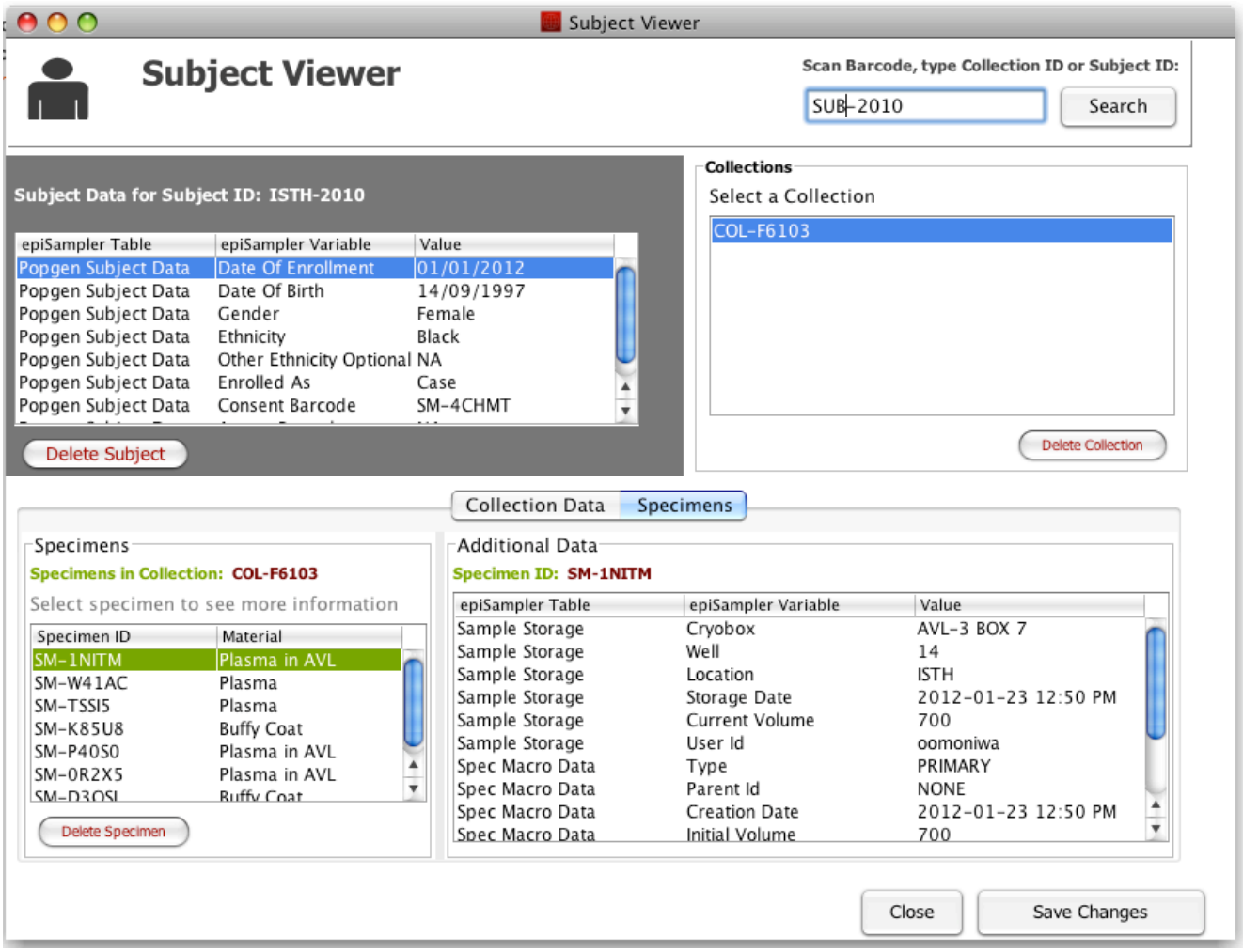
Step 3) Once you have reviewed the import, press the 'Import to Database' button.


Upload User Data
User Generated Data Upload
Step 1 – Select File to Import
/Users/episampler30/Desktop/popgen_subject_data.csv
Browse
Step 2 – Select Table
(1) popgen control subject data
(1) popgen clinical data
(3) Data Survey
(9) popgen subject data
New Table
New Table Name:
Choose an Index
Specimen ID
Subject ID
Collection ID
Step 3 – Review Import
Table Name: popgen_subject_data
Variables Matched: 9/9
Import Size: 88
Final Table Size: 208
'Nickname' popgen subject data
Excluded Variables:
Step 4 – Finish
Import to Database
Import Preview
ES_SUBJECT_ID ES_DATE_OF_E... ES_DATE_OF_BI... ES_GENDER ES_ETHNICITY ES_OTHER_ETH... ES_ENROLLED_AS ES_CONSENT_B... ES_ASSENT_BA... ES_FDB_INT_RE...
ISTH-0000 19/10/2011 14/09/1974 Female Esan NA Control SM-70I83 NA L44H541U2032
ISTH-2000 18/01/2012 23/05/1981 Female Esan NA Case SM-2MW7I NA 66F5HP16J3C7
ISTH-2001 17/01/2012 11/03/1968 Male Urhobo NA Case SM-4184G NA CULB7NQM7KID
ISTH-2002 18/01/2012 20/03/1976 Male Esan NA Case SM-EE137 NA A56L0W814M2V
ISTH-2003 18/01/2012 10/07/1976 Male Esan NA Case SM-UT757 NA C73FJD632J35
ISTH-2004 19/01/2012 20/10/2012 Male Igbo NA Case SM-ER82O NA SW80ND0Y5UL4
ISTH-2005 19/01/2012 24/02/1986 Female Other ITSEKIRI Control SM-MV2FD NA 8688KH2U13K0
ISTH-2006 19/01/2012 03/09/1983 Male Igbo NA Control SM-24B0K NA 5FRG4UEEVFLL
ISTH-2007 19/01/2012 16/11/1982 Male Igbo NA Control SM-3NKJ1 NA 82YQN4SOM608
ISTH-2008 19/01/2012 31/03/1984 Male Yoruba NA Control SM-30262 NA 762PHPO3R0K4
ISTH-2009 19/01/2012 24/09/1980 Female Etsako NA Control SM-143JB NA 81H53E241R16
ISTH-2010 15/01/2012 14/06/1951 Male Yoruba NA Case SM-4CHMT NA C4DA2KL870IN
ISTH-2011 19/01/2012 21/12/1982 Female Esan NA Control SM-E7EK1 NA G2S27DRNO574
ISTH-2012 19/01/2012 17/06/1977 Female Esan NA Control SM-3B136 NA 2XJQL874127A
ISTH-2013 19/01/2012 12/07/1994 Male Yoruba NA Case SM-8U86K NA 3P37DSRT0121
ISTH-2014 20/01/2012 24/01/1974 Female Bini NA Case SM-1UUW3 NA 16XAEN3R0Y27

4.8 Viewing Data

epiSampler does the work of linking data across multiple tables. It is possible to look up all of the data associated with any given subject, including collection level data, subject level data and information on all of the related specimens using the Subject Viewer. The subject viewer can by launched by clicking the Subject Viewer icon on the quick menu, or simply by entering or scanning any barcode, subject ID or cryobox in the quick search field.

4.8.1 Subject Viewer



Looking up Data

Scan or enter a Specimen, Collection or Subject ID in the search field and press the 'Search' button.

- Subject Data – All associated data from user-created data forms is visible in the upper left table.
- Collections – All associated collections are displayed in the upper-right list. Click on a collection to load the collection–level data.
- Collection-level data from user-created forms is visible on the 'Collection Data' Tab.

- Specimens – All specimens belonging to the selected collection are visible on the Specimens Tab.
- Specimen Data – Select a specimen from the Specimens List on the left side of the Specimens tab to view all specimen-level data for the selected specimen.

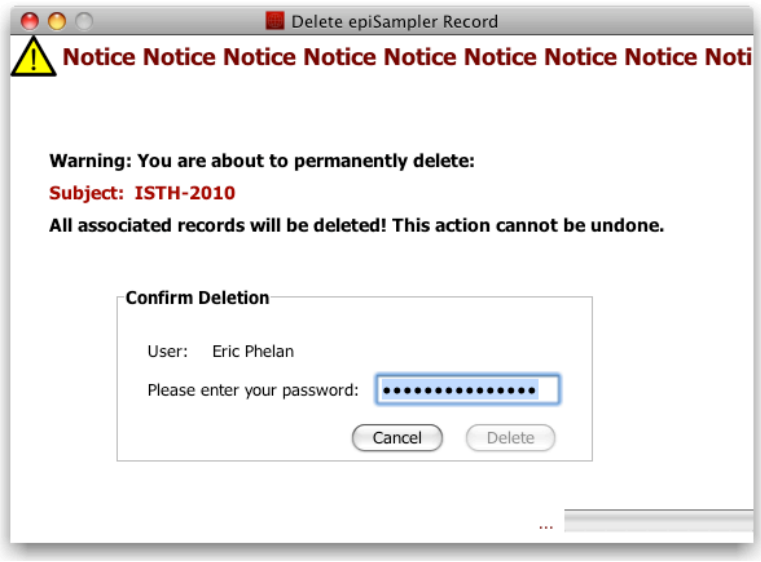
More Storage Information: If a specimen has been selected you can view it in the CryoBox viewer by right-clicking in the specimen data table. Select 'View in CryoBox Viewer' from the pop-up menu.

Editing Data

To edit a value, double click on the desired data. All fields except Creation Date and User ID can be edited. To save data changes, press 'Save Changes' .You will be prompted to confirm changes. A record of the data changes will be saved in the Data Change Log

Deleting Data

Specimens – Navigate to the specimen you wish to delete, and select it by clicking on the specimen on the list of specimens. Click 'Delete Specimen'.



Collections – Select the collection you wish to delete from the list of available collections, or search for it directly in the search field. Press 'Delete Collection'.

Subjects – Load the subject of interest using the search bar. Any collection ID or specimen ID, along with the Subject ID will load the associated Subject. Press the 'Delete Subject' button.

Confirming Deletions

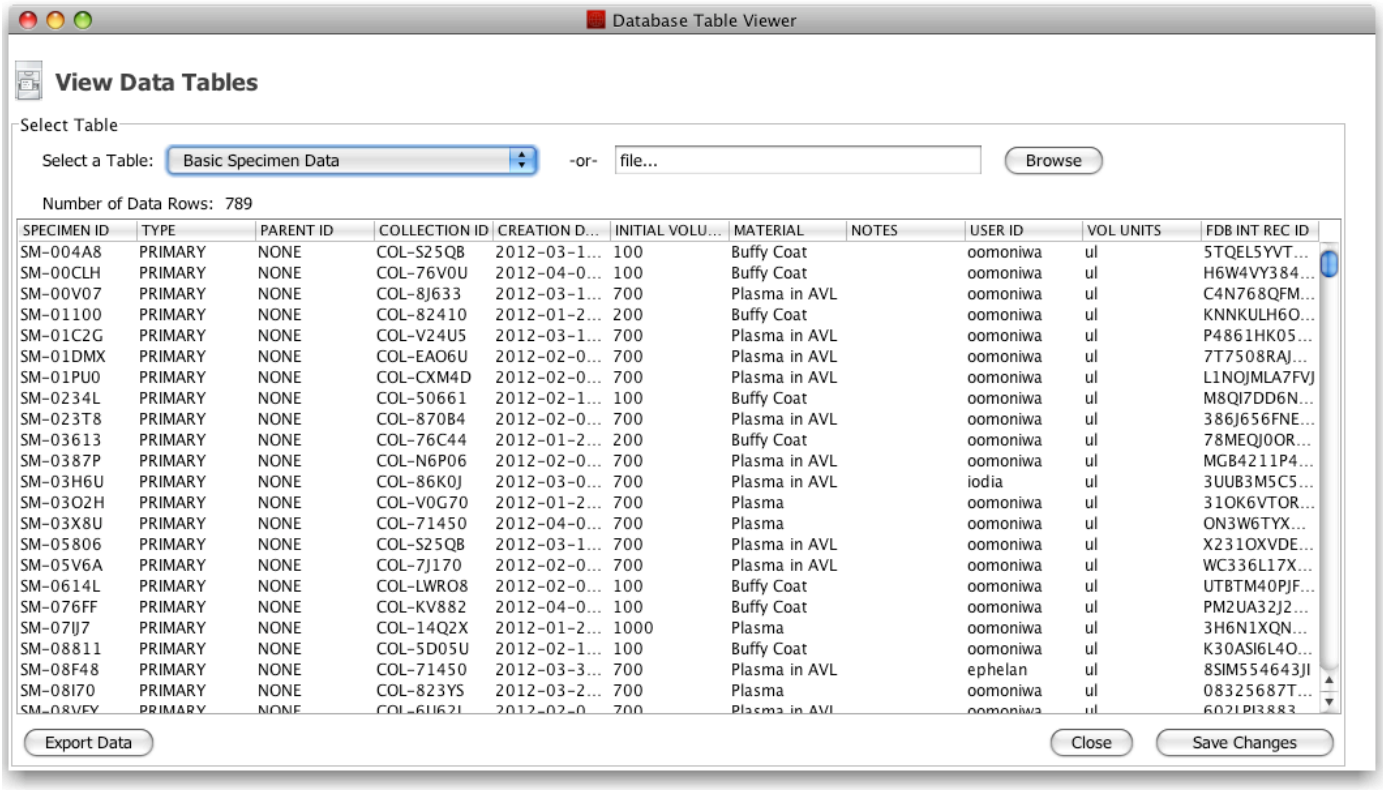
After pressing delete you will be presented with a Deletion Confirmation Window. Enter your password and press 'Delete'. You will be prompted to confirm deletion of the specimen. Press OK to permanently delete the specimen, or Cancel. A record of the deletion, including date and user id, but not the underlying data will be made in the data deletion log.

Note: If you choose to delete a Specimen, Collection or Subject, all associated data at that data level and below will be permanently removed from your computer, the server and all other computers upon synching. For example, if you chose to delete SUBJECT ID: SUB-2010, all subject data, collections, and specimens associated with the subject, including shipping data, data export logs and data change logs will be permanently removed from epiSampler. The only records that remain are collection kit labels. These can be reprinted at any time, and the data reentered if the deletion occurred in error.

4.8.2 Data Table Viewer

You can directly view the underlying data tables with the Data Table Viewer. Unlike other tools, the data table viewer does not organize or link records. This is the data in its most basic format.

To open the data table viewer: *Menu: Data -> View Data -> Database Table Viewer*



Select the table you wish to view from the dropdown list. User-generated tables are listed by their Nicknames. Additionally you can load an epiSampler encrypted file directly by browsing for the file.

Exporting Data

You can save the table to a comma-delimited format (.csv) by pressing the 'Export Data' button. A record of the data export will be visible in the Data Export Log.

Editing Data

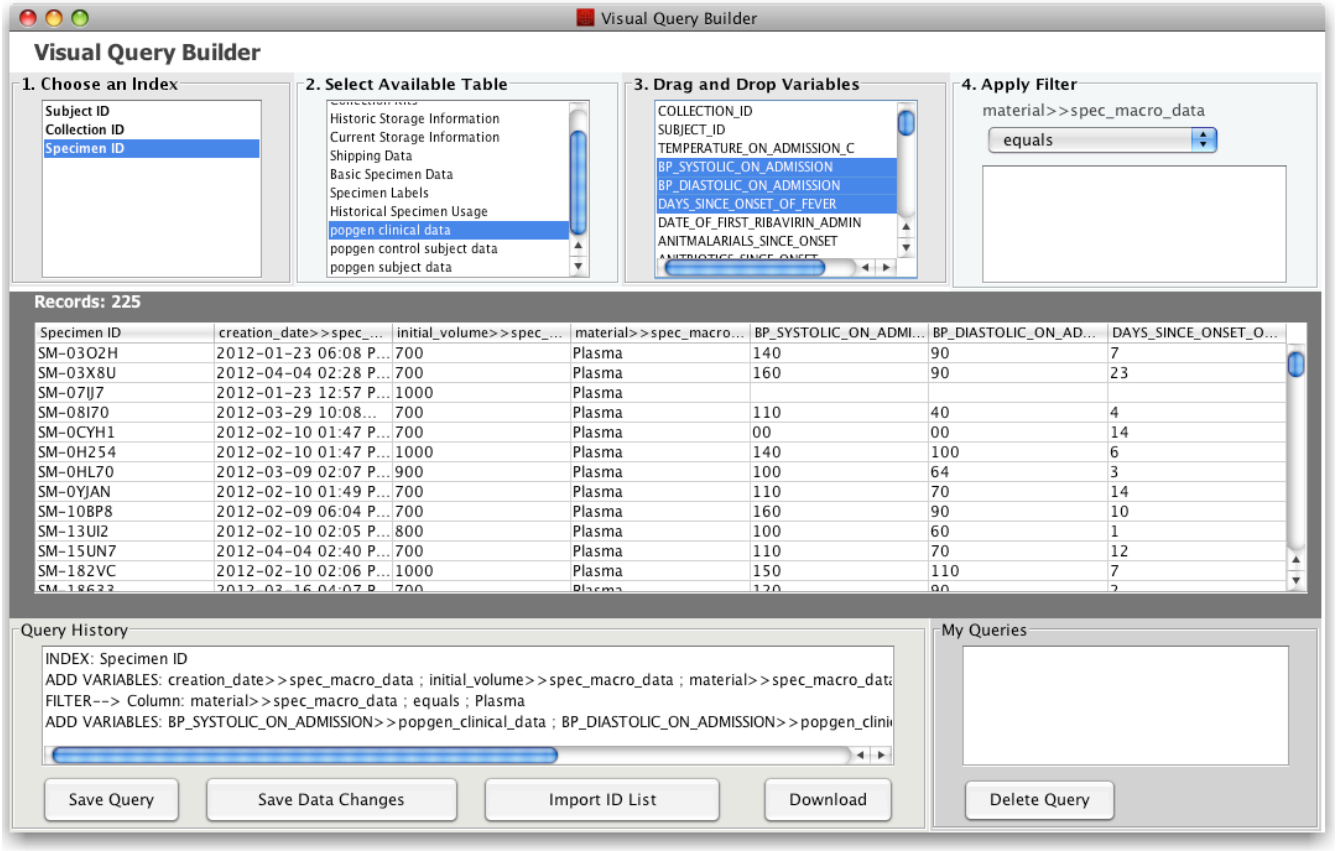
If the loaded data table is editable, you will see a 'Save Changes' button in the bottom right corner. Edit data directly in the table by double-clicking the value and typing in the new value. To save your changes, press 'Save Changes'. You will be prompted to confirm the data changes.

Note: Not all tables are editable. Generally, specimen, collection and subject data can be edited, but in order to maintain data integrity, certain tables are read only.

Note: FDB_INT_REC_ID: This column exists on all editable tables including user-generated tables. It is a unique record id used by epiSampler to identify rows of data. You should not alter this number under any circumstances.

4.8.3 Visual Query

The visual query builder lets you build complex queries spanning multiple tables using a drag-and-drop interface. Launch the visual query builder by clicking on the visual query icon on the quick menu or from *Menu: Data-> View Data -> Visual Query*



Building a Query

Tip: Revisit the chapter on data structures in epiSampler. The VisualQuery Builder can traverse the data structure from the bottom up, but not the other way. In other words, if you select Specimen ID as your index, you will be able to access data from all the levels: specimen, collection and subject. If you select Collection ID as your table index, you will only have access to collection and subject- level data.

Step 1) Select the index for the table you wish to build from the left-most list and drag it into the table.

Step 2) Tables from which data is accessible are displayed in the second list. Navigate through the various tables to find the variables you wish to include in your query. Available variables are displayed in the third list. Select a table of interest by clicking on it.

Step 3) Select the variables of interest. You can select a range by selecting the first variable in the range, then while holding down the shift key, select the last variable of interest. To select multiple, non-consecutive variables, hold down the control key while selecting variables from the list. Drag the selected variables into the table.

Continue with steps 2 and 3 to add additional variables from multiple tables to the query table.

Filtering
To apply a filter, select the column you wish to filter by clicking on a value in the column. Select the filter type from the dropdown. If the filter requires a parameter, select a value from the 'filter by' list.

Stepping Back and Changing a Query
You can back up to any step in the query by clicking on the step in the Query History at the bottom of the VisualQuery Builder. To delete a step, right click on it in the history, and select Delete from the popup window.

Starting Over
You can start over by dragging an index (either Specimen ID, Collection ID or Subject ID) from the first list into the table. This will erase and restart the query builder.

Saving a Query
Saved queries are not static data tables. Selecting a saved query from the list of queries will run the same set of query instructions, but will load the most up-to-date data. Saved queries are only visible to the user who created and saved the query.

Save a data query by pressing the 'Save Query' button; you will be prompted to give the query a name. Saved queries appear in the saved query list on the bottom right of the VisualQuery builder.

Deleting a Query
Select the saved query from the query list you wish to delete and press 'Delete Query'.

Editing Data
Data can be edited here, as elsewhere, by changing the data value directly in the table. To commit your changes to the database press 'Save Changes'. You will be prompted to confirm the data changes.

Finding Data for a List of Specimens/Collections/Subjects
You may already have a list of identifiers in excel or another spreadsheet program for which you would like to find additional data. You can import the list by pressing the 'Import ID List' button. Once the list has been loaded to the table, you can continue to add variables to the query by following steps 2 and 3 above.

Exporting Data
You can export the contents of the query table to a csv file by pressing 'Export Data'. Make sure to give the file a name ending in .csv and to select a folder in which to store the file.

4.9 Logs and Records

epiSampler keeps detailed logs of most data transactions. The creation date, and user id of the creator of most records is held within each row of data. Additionally, the following logs keep track of additional activities and can all be viewed and exported using the Database Table Viewer

Data Change Log
The data change log keeps a record of every data value change. The log records the change date, the location of the data point by table and column name, the user id of the editor as well as the prior and new values.

Data Export Log
epiSampler is a closed system in that data is accessible, editable and able to be entered only by authenticated users. epiSampler data would be of little use to researchers if it could not be removed from epiSampler for use in other analytics programs. Data is exported from epiSampler in a comma-delimited format (.csv files). The data export log records the date, user id and variables accessed each time data is exported.

Data Removal Log
If data must be permanently removed from epiSampler, whether because it was incorrect, or a subject withdrew from your study, a record of the deletion is made in the data deletion log. The date, table, variable and user-id are recorded in the log, however the underlying data is not stored. The only way to restore a deleted record is to re-enter it.

Shipments
A record of all shipments is recorded in the shipments log. The log records the shipping lab, recipient, shipment date, shipping status and details the CryoBoxes included in the shipment.

Appendix 1
epiSampler Default Data Tables

Table Nickname	epiSampler Table Name	Editable	Columns
Basic Specimen Data	spec_macro_data	Yes	SPECIMEN_D, TYPE, PARENT_ID, COLLECITON_ID, CREATION_DATE, INIITIAL_VOLUME, MATERIAL, NOTES, USER_ID, VOL_UNITS
Sample Kits	sample_kits	No	SPECIMEN_ID, COLLECTION_ID, MATERIAL, COLLECTION_NAME,KIT_NUMBER
Current Sample Storage	sample_storage	Yes	SPECIMEN_ID, CRYOBOX, WELL, LOCATION,STORAGE_DATE, CURRENT_VOLUME, USER_ID
Specimen Labels	specimen_barcodes	No	SPECIMEN_ID, MAIN_TITLE , SUBTITLE, MATERIAL, CREATION_DATE
Shipments	shpiments	Yes	SHIPMENT_NAME, CRYOBOXES, USER_ID, SHIPPER, RECIPIENT, SHIPMENT_STATUS, NOTE
Data Change Log	data_change_log	No	OBJECT ID, SYSTEM_RECORD_ID, TABLE, VARIABLE, PREV_VALUE, NEW_VALUE, USER_ID, TIMESTAMP
Data Export Log	data_export_log	No	USER_ID, TIMESTAMP, SYSTEM, VARIABLES
Data Deletion Log	data_deletion_log	No	RECORD_TYPE, RECORD_ID, USER, TIMESTAMP