

Data Management for Cytek Aurora and Northern Lights Systems

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If you're struggling to keep up with data backups and clean ups for your cytometer workstation, you are not alone. Data management is a challenging task in all domains, and flow cytometry is certainly no exception. To help you on your quest to clean up your cytometer's workstation and establish a regular backup plan, the Cytek Technical Application Specialist team generated these data management best practices to ensure optimal performance of SpectroFlo® software. First, let's cover a few general tips helpful for all SpectroFlo users. Then, let's cover **best practices for non-Admin users** (e.g. operator accounts in SpectroFlo), and finish with **best practices for administrators** (e.g. Admin accounts in SpectroFlo).

General Tips

- Every Cytek® Aurora & Northern Lights workstation comes with a D drive (or E or F, depending on the computer model) for data storage. This can be used to store exported individual users' data and database backups until they can be moved to long term storage. The Administrator should determine the appropriate workflow for their users.
- It is NOT recommended to export data directly from SpectroFlo to a server as it is more likely that the transfer could get interrupted by updates, and could potentially corrupt the exported files. Best practices are to export data to the local computer first (e.g. folder on desktop), then transfer the data to a server.

- Is it NOT recommended to export data directly from SpectroFlo to an external USB device as the export will go very, very slowly. Instead, export to the local computer first, and then drag and drop the files to your external USB device.

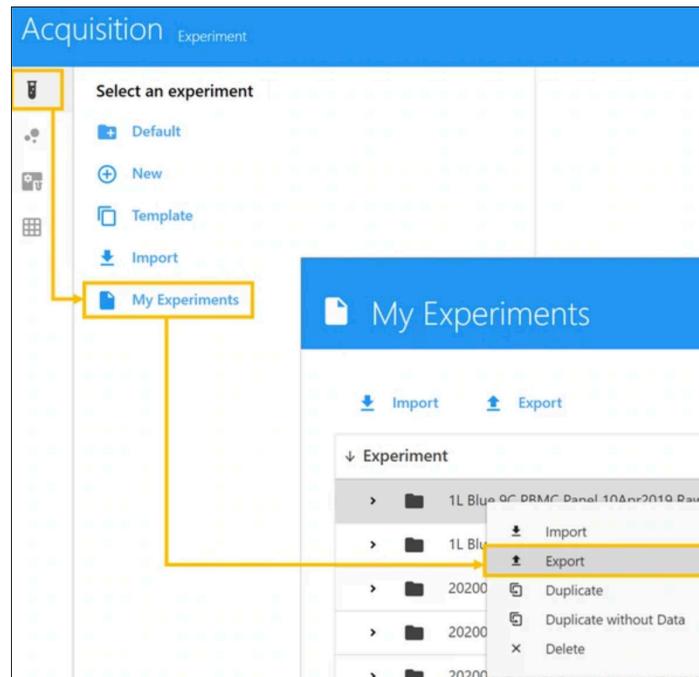
Data Management Best practices for Non-Admin Users

For users, there are 3 options to backup data after each experiment is completed. Each of these depends on the subsequent analysis workflow, however, we always recommend **Option 1** as it allows you to bring the original experiment back into SpectroFlo. This may be completed by either the Operator or the Administrator.

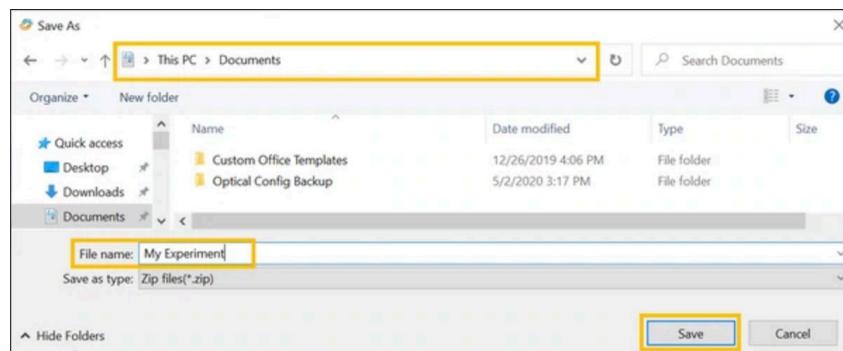
Option 1: Export the Experiment from "My Experiments"

This method of backup is recommended to preserve SpectroFlo's experiment structure (e.g. FCS file organization, experiment template layout, and associated worksheets):

1. Select the experiment(s) to be exported under the "Acquisition" module > "Experiment" tab > "My Experiment" and click "Export".



2. Select the final file saving location, keep your original experiment name or type an export file name, and click Save.



3. When the export is completed, the window below will appear. Click OK to close it.



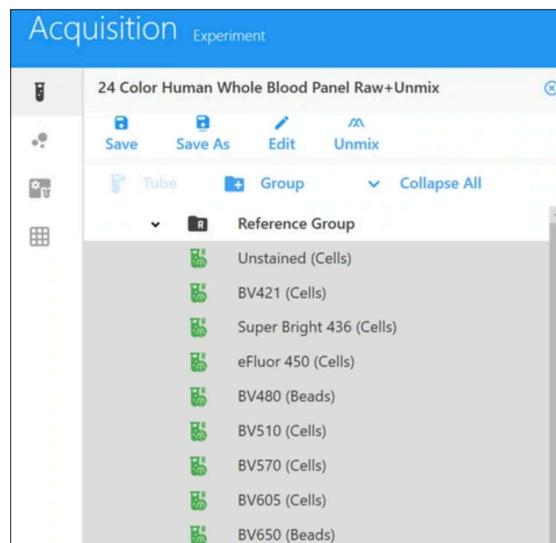
The length of time it takes to export is linearly dependent on the amount of data in the experiment(s). An experiment that is 270 MB takes approximately 13 seconds to export, whereas an experiment twice that size takes 26 seconds. This method creates a ZIP folder for each experiment containing the raw and unmixed FCS files, any linked worksheet(s) and the experiment template (example shown below). For more information, see the Cytek video tutorial on [Exporting Experiments](#).

Name	Type
Default Unmixed Worksheet.WTML	WTML File
Default Raw Worksheet.WTML	WTML File
24C Worksheet 2.WTML	WTML File
24 Color Human Whole Blood Panel Raw...	EXPT File
Unmixed	File folder
Raw	File folder

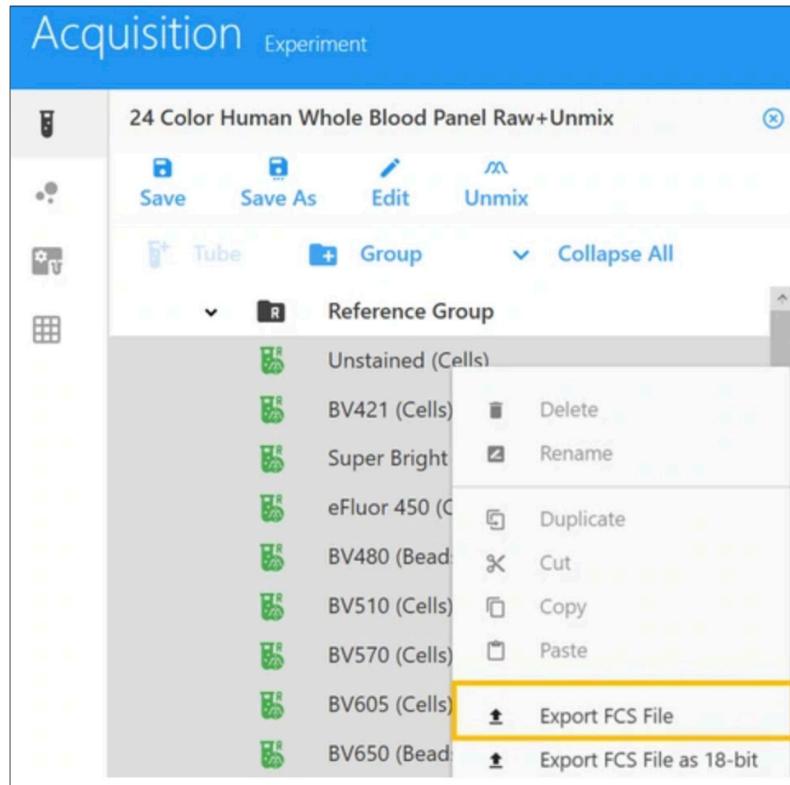
Option 2: Export FCS Files Directly from the Open Experiment

This is the only method that preserves the full FCS file naming path (experiment-group-tube) as the tube name. This can be helpful for subsequent analysis in third party FCS analysis software packages. Both Raw and Unmixed FCS files will be exported if present in the experiment.

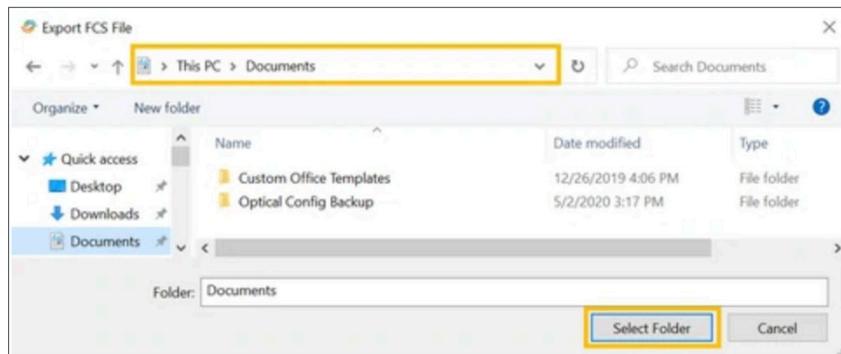
1. Within the open experiment under the "Acquisition" module, multi-select all the tubes to be exported. *Tip: While holding the Shift key, click the first file in the experiment, then scroll and click the last file, to quickly select many files at once. Alternatively, hold the Control key while individually clicking all the files you want to export.*



2. Right click and select "Export FCS File".



3. Create or select a folder to export the FCS files to and click Select Folder.



4. The blue circle of dots shown below will appear in the middle of the screen. When the export is completed, the blue circle disappears and you can use SpectroFlo again.



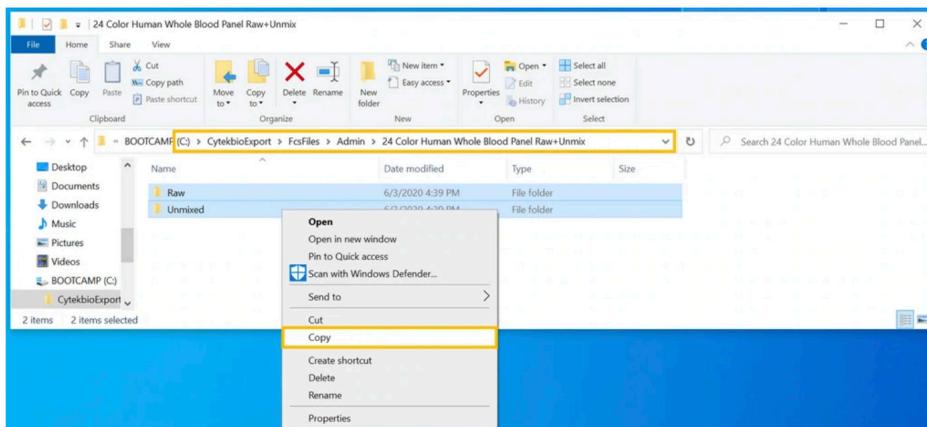
Again, the length of time it takes to export is linearly dependent on the amount of data in the experiment. With this option, you can also export the FCS files as 18 bit. For more information, see the Cytek video tutorial on [Export FCS files in 18 or 22 Bit Format](#).

Option 3: Copy FCS Files from the CytekbioExport > FcsFiles Folder

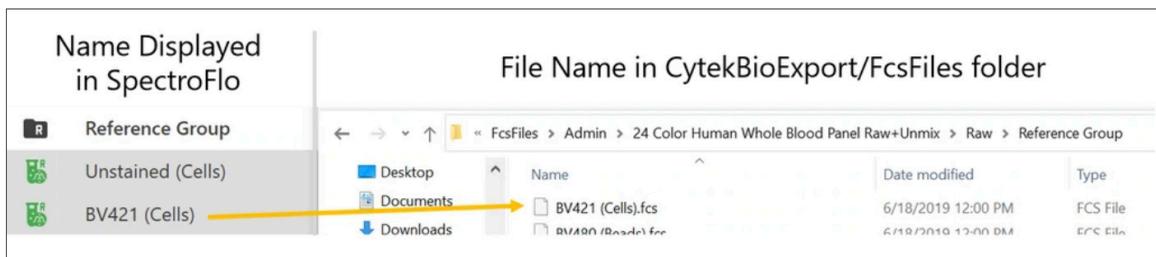
Caution: Do not remove files from or add files to this folder as it is managed exclusively by SpectroFlo.

This method is fastest as the FCS files are already exported from SpectroFlo and available on the workstation. However, there is no experiment structure around the files so re-building the experiment in SpectroFlo to re-unmix them can be time consuming:

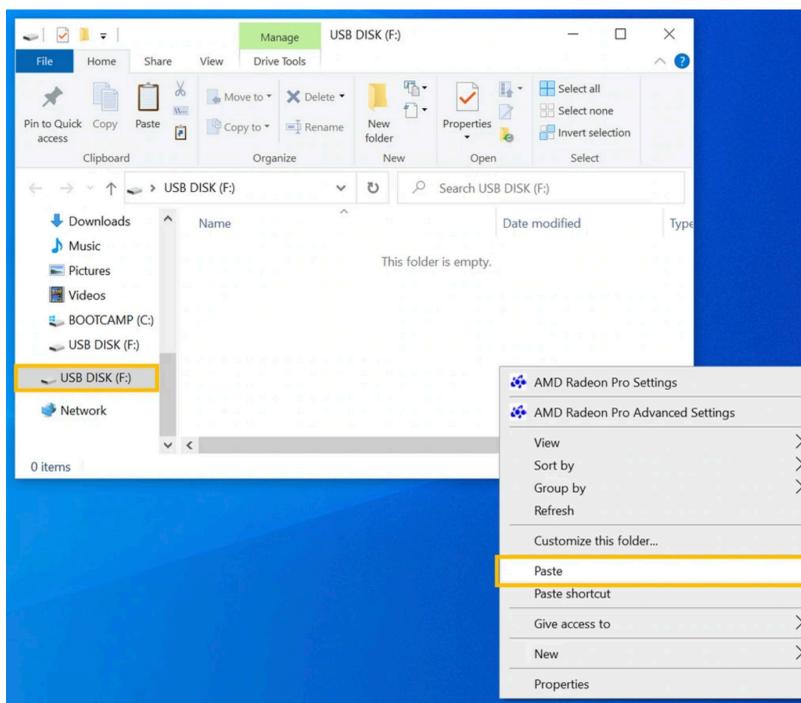
1. Navigate to the CytekbioExport folder and copy (select folders, right click, and choose Copy) the Raw and/or Unmixed FCS files from their respective folders within the default “FcsFiles” folder.



Please be advised that the file names of each of the experiment tube contain only the tube name with this option:



- Open the folder you want to copy the files into (e.g. external USB device or server), then right click and choose Paste.



Note: The Default FCS file export location is C:\CytekbioExport\FcsFiles. The Admin account can change the location in the "Preferences" module -> "Storage" tab -> Experiment FCS File Folder.

Data Management Best Practices for Administrators

To ensure optimal performance of SpectroFlo, it is necessary to periodically backup and remove old experiments and FCS files to keep the 10GB database from filling up. The frequency depends on how often the instrument is used but can range from weekly to quarterly. The information below is to guide administrators or those responsible for instrument maintenance:

Experiment and FCS File Backup

The Administrator should develop a system to regularly back up data that is user-generated. In this case, Options 1 and 3 above (if not performed by the users) can be utilized to ensure there is no chance of data loss and that experiments and/or .fcs files can be recovered easily when needed.

Database Backup

Prior to removing any old data files, back up the database using the Data Maintenance tool. This will allow the administrator to restore the software from the last database backup if needed.

There should be a shortcut to the Data Maintenance tool on the desktop. Please remember to close SpectroFlo before you open the Data Maintenance utility as only one can be opened at a time. For more information, see the Cytek video tutorial on [Data Maintenance](#).

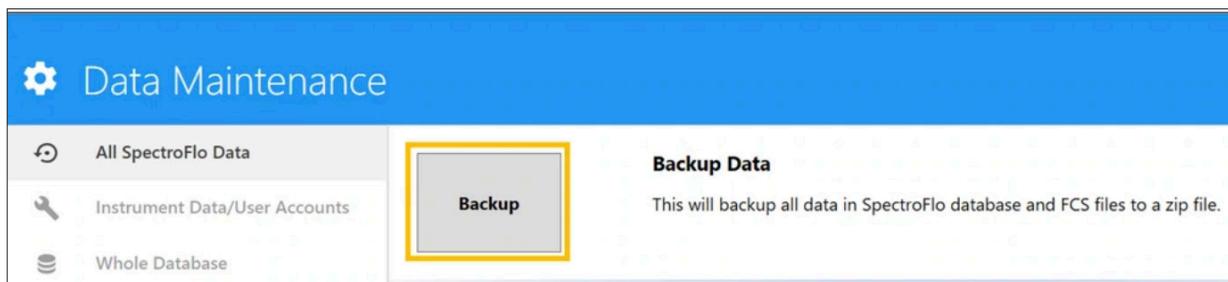
1. Double Click to open the Data Maintenance tool.



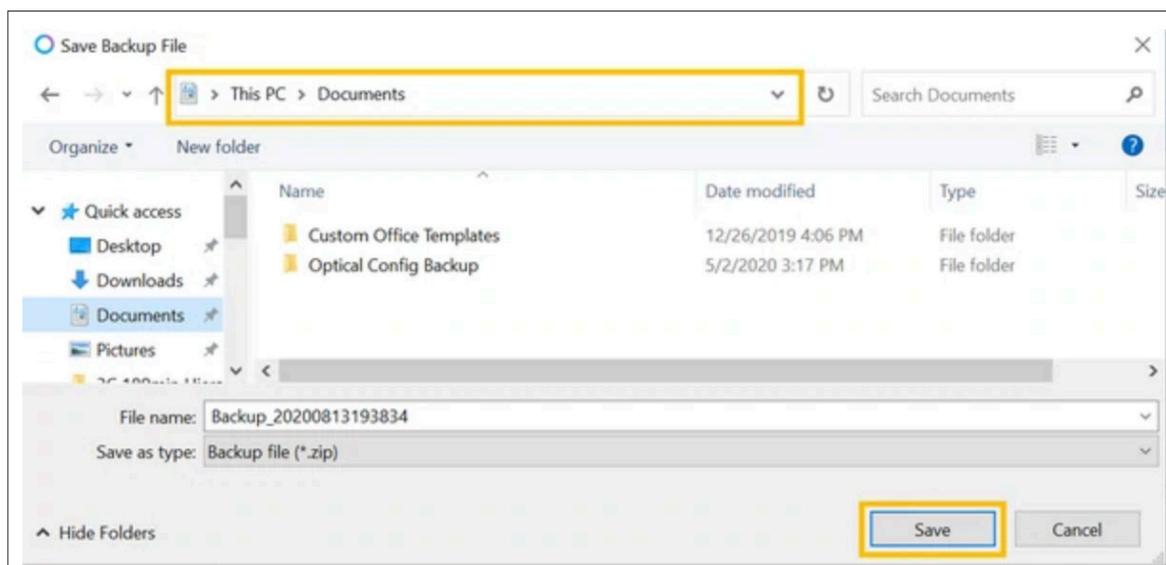
Note 1: If Windows Security settings for opening programs is set to high, a pop-up may appear. Click "Yes" in the pop-up to allow the utility to make changes to your device.

Note 2: Please contact your IT department to set up access to the Data Maintenance tool if access is denied.

2. Under the "All SpectroFlo Data" tab, click "Backup". This will create a .ZIP folder containing all experiments, QC reports, templates and user accounts within SpectroFlo.



3. Choose an export location on the workstation and click "Save".

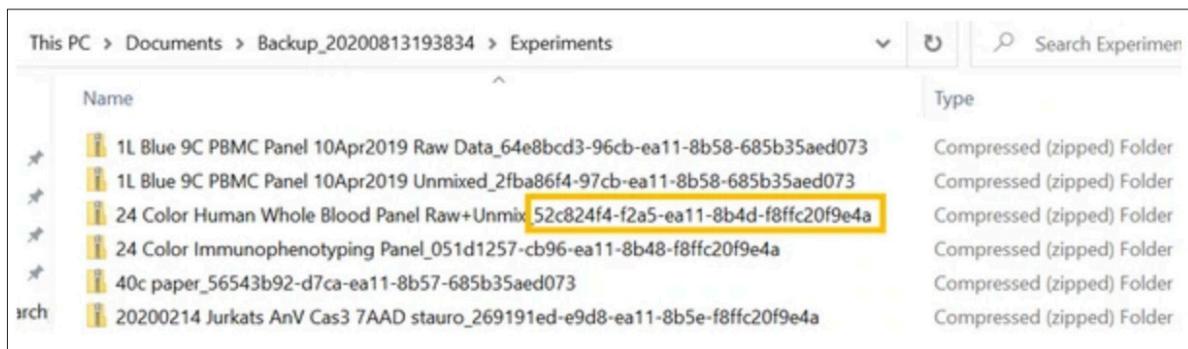


4. A pop-up window will appear when the backup is done. Click OK in the pop-up window, then close the utility.



Again, the length of time it takes to export is dependent on the amount of data in SpectroFlo. If there is a lot of data in SpectroFlo, you may want to run this overnight.

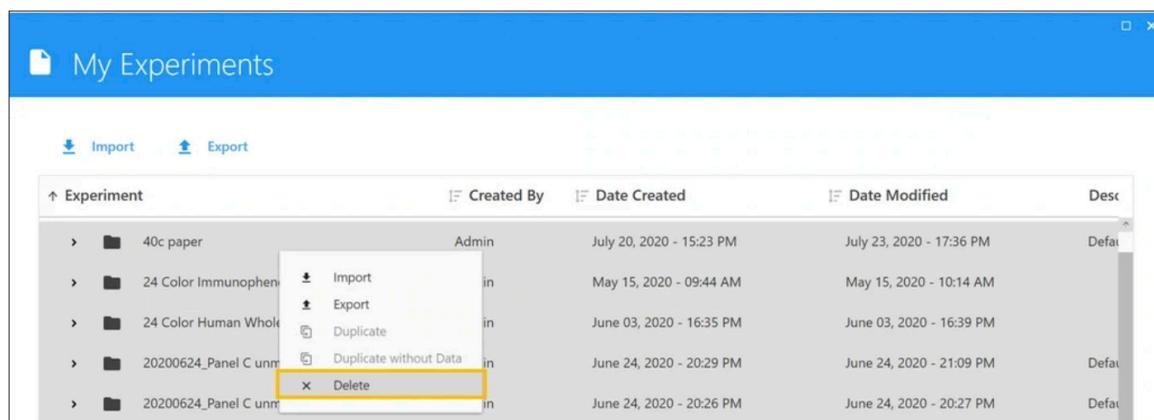
Note: All experiments will be zipped as individual files in the "Experiments" folder with an added string of numbers and letters to the experiment names. The added string in the file names will need to be removed before importing the zipped experiments into the SpectroFlo.



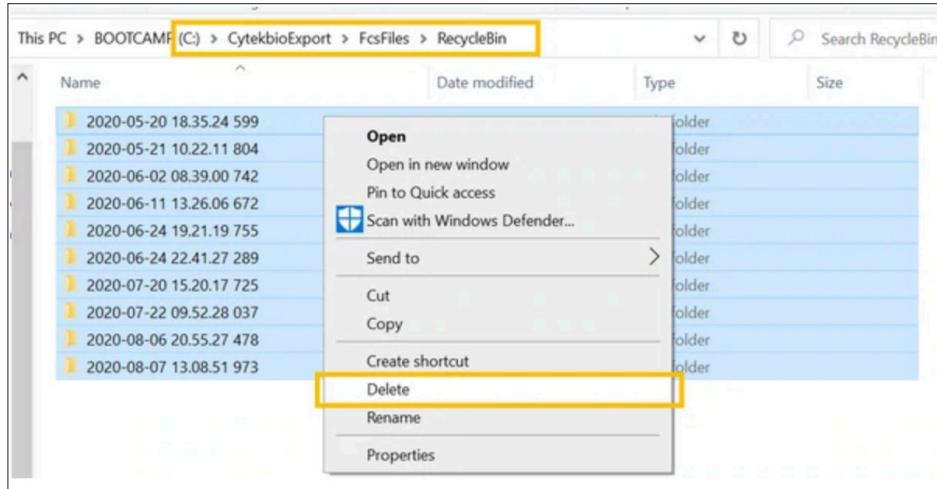
Remove Old Experiments and FCS Files

Once the data is backed up, log into SpectroFlo using the Admin account. There are 3 locations where data will need to be removed:

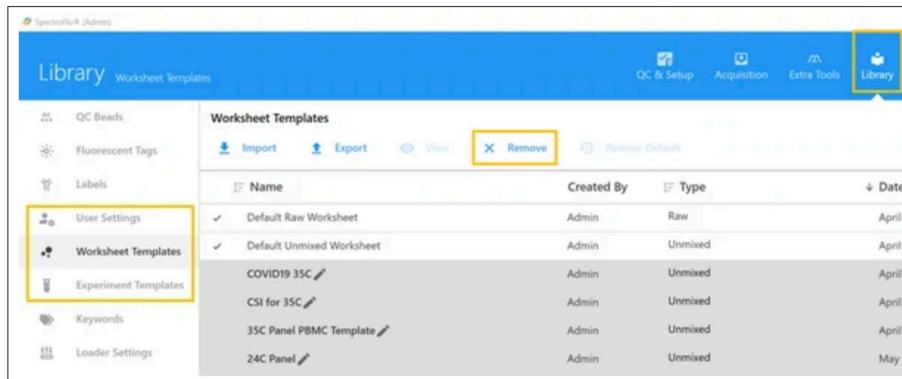
- 1. My Experiments** - Select the experiment(s) to be deleted under the "Acquisition" module > "Experiment" tab > "My Experiment". Right click and select "Delete".



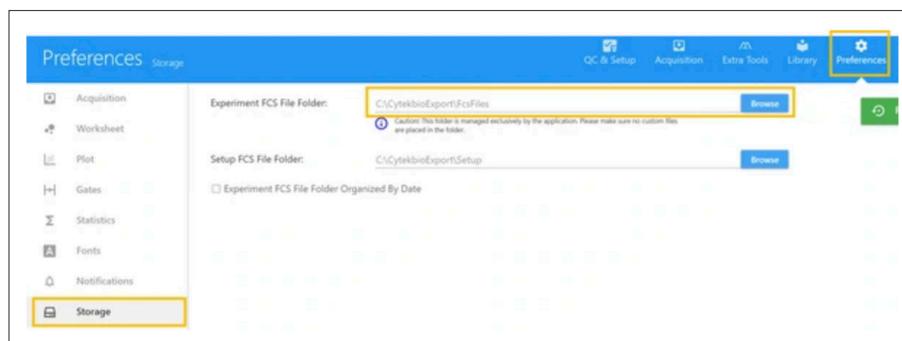
2. **RecycleBin Folder** - Any deleted experiments from the previous step will be relocated to "RecycleBin" folder automatically the next time SpectroFlo software is opened. Navigate to CytekbioExport > FcsFiles > RecycleBin and delete all files in that folder.



Library – It may be necessary to periodically delete items that are stored in the "Library" module such as Worksheet Templates, Experiment Templates and User Settings. The Administrator should check with individual users to identify items that are no longer in use. Multi-select items to delete by holding the Shift or Control key while clicking on the items, then click the Remove button in the top menu bar as shown below.



Note: The Default FCS file export location is C:\CytekbioExport\FcsFiles. The Admin account can change the location in the "Preferences" module -> "Storage" tab -> Experiment FCS File Folder.



If you have additional questions, please don't hesitate to reach out to [Cytek Technical Support](#) or to your local technical application specialist for support.

Last but not least, use the Save as PDF button below to save this post for reference, or download the shorter Instructable version below to keep near your cytometer.

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