SARTORIUS

Cell Selection and Retrieval

CellCelector Documentation and Data Export

Comprehensive Data Export and Documentation Settings

- Experiment management and archiving
- CellCelector database and image settings
- Picking documentation: before and after images

Picking Documentation: Before and After Images

Overview

Two monitors are used to control of the CellCelector, with the left monitor used to control the instrument and perform data analysis, while the right is used for cell observation. Windows 10, an anti-virus program and two network cards are installed on the computer. One network card is used for the connection with the CellCelector and the second for connecting the computer to a local network or internet.

Picked Image Documentation

All documentation images of a picked particle are displayed with information regarding well, source and destinaton parameters for each image. These images (Fig. 1) include:

Original Position Images
Original position images are displayed if the particle movement correction (see the "CellCelector Picking and Transfer" technical flyer for more information) has been activated. The green circle around the selected particle shows the search area if, due to its own movement, it is no longer in the exact position as defined during the analysis of the scanned image.

Before Picking Images
An image is created before each picking.

After Picking Images
An image is created after each picking. The green circle shows the area around the original position of the picked particle where successful picking is confirmed. Both before and after images are always created by the software.

Email Notifications

The CellCelector software offers the possibility to be notified by e-mail when a process step has been completed, an error as occurred, or user input is required. Server details can be entered depending on user login and all exported files are password protected.

Experiment Manager

The experiment manager allows users to efficiently organize both previously conducted and newly imported CellCelector experiments (Fig. 2A). Only users with sufficient privileges can see all possible experiments, whereas other users can only view their own experiments or those set for public viewing. Experiments can then either be exported or reanalyzed as required.

Original Position	Before Picking	After Picking
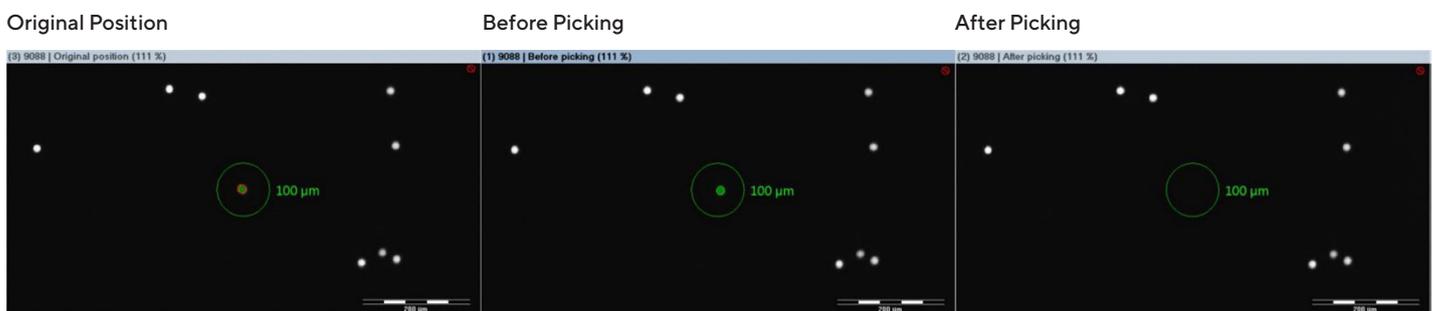
Figure 1: Overlays in original, before and after picking images

CellCelector Database and Image Settings

Highly Flexible Storage and Export

The CellCelector database (Fig. 2B) provides all settings required for storing and processing data, such as:

Location for Data Storage
Specifies which folders all experiments, snapshots or files are to be saved.

Image Settings
Images are saved by default in T00 format (internal TIF format for image processing software), but TIF (all metadata, such as recording date, objective, overlays etc.), JPEG (only images), BMP, GIF, and PNG formats are allowed. There is also an option for compressing single scan images into a zip file.

Image Alignment Settings
Used for the arrangement of the single scan images into a complete image. For more information, please see the "Imaging and Image Analysis" technical flyer.

Single Image Settings
Individual images can be compressed, with a choice between JPEG, LZW and Packed Bits. Users can define the quality of JPEG images – the higher the quality, the lower the compression level. The quality of the packed JPEG image can be defined using a slider bar. In the standard setting, images are compressed in JPEG format with maximum quality. LZW is the default selection, which is a lossless compression format.

Image Size Settings
Following successful picking and deposition, overview images can be constructed from single scan images and scaled down to the selected size. The standard setting for the size of the overview image is 4500 × 4500 pixels, with the higher the pixel number, the greater the storage space required for the image. Settings for images, snapshots and data export can all be organized under a single window. A wide range of different overlay text, colors, region of interest and cell selection markers, for example, can be added quickly before export.
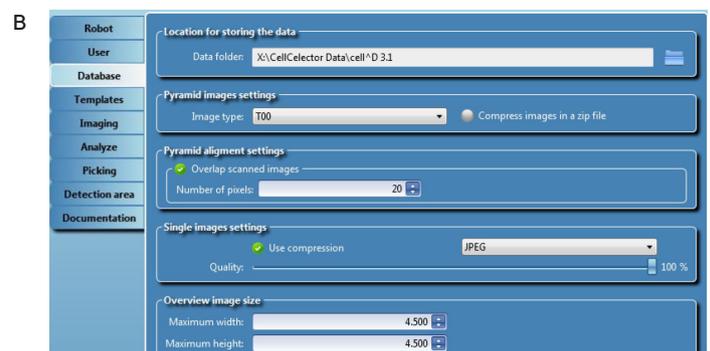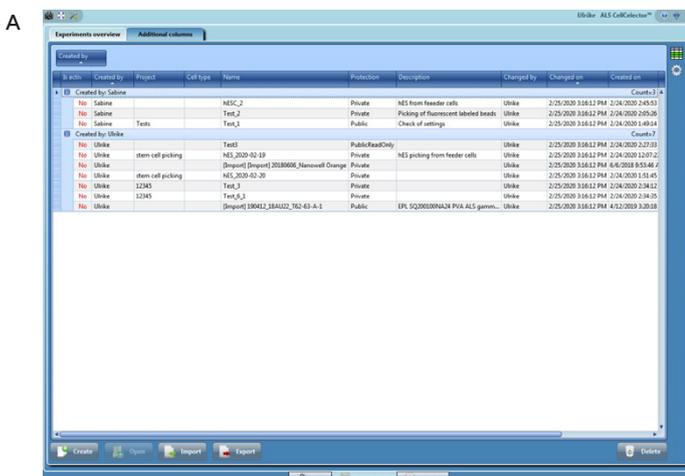

Figure 2: (A) Experimental Manager interface, highlighting experiments created by different users. Information includes experiment description, protection levels, creation dates and whether the protocol has been modified and by which user. (B) CellCelector Database Manager interface.

Image Settings and Experimental Archiving

Picking Image Options

The documentation menu contains all information to determine the settings for images, snapshots and data export:

Image Settings
Used to add additional information which can be inserted into the images, such as overlay text, cell selection markers, image particle colors, overlay particles, regions of interest, image outlines and many others.

Snapshot Settings
Allows overlays and scale bars to be burned into the images, 16 Bit to 8 Bit conversion, and image compression.

Export Settings
Folders can be created and defined for saving data. Images can be sorted by source or destination plate, and subfolders can be created for individual wells and particles.

Excel Options
Both the documentation images and the Pick List with information on single particles can also be exported. Different options are available based on whether the full experiment, individual plates or wells are required for export.

Experimental Archiving

The archiving of experiments for subsequent viewing or analysis initially requires the export of all experimental data, with the creation of an .exp file.

Depending on the size of experiment, 10 different compressions levels are available to facilitate file export, such as:
- **Level 0 Compression:** No compression
- **Level 1 Compression:** Offers best speed but lowest compression level
- **Level 6 Compression:** Optimal option between file size and compression speed
- **Level 9 Compression:** Offers the highest level of compression, minimizing the exported file without any loss in image quality, despite slower compression speeds

Hardware	Specification
Workstation	- CPU Intel® Core® i7 at 2.9 GHz or better - Windows 10 64-bit
Memory	16 GB RAM or more
Data Storage	- 256 GB M.2 Solid Scan Drive - 2 TB Solid Scan Drive - 2 TB Hard Disk Drive (HDD) - 8 × DVD ±RW
Networking	1 network card for the connection to the CellCelector
	1 network card for the connection to the intranet|internet
Screens	- Two 19-inch LCD - 1280 × 1024 px resolution
Data Export	Images (TIF, JPEG, GIF, BMP, PNG); Numeric data (csv, xml)

Table 1: CellCelector data management system hardware specifications

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