Miltenyi Biotec

MACS® iQ View Software Control Module 1.0

User manual



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MACS® iQ View Software Control Module 1.0

User manual

Original instructions

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Read the chapter **Important safety information** and all other information in the MACSima System user manual before using the instrument

⚠WARNING Before using the MACS iQ View Software Control Module, read the chapter **Important safety information** in the MACSima System user manual and all other information contained in this software user manual, including any safety and operating instructions. Pay special attention to all warnings displayed on the instrument. Failure to read and follow these guidelines could lead to improper or incorrect usage and result in damage to the instrument. Improper usage could also cause severe personal injury, death, unpredictable results, instrument malfunction, and premature wear to components shortening the lifetime of the instrument. Such actions may void your warranty. Keep the user manual and any other safety and operating instructions provided with the instrument in a safe place accessible to all users for future reference.

If you have a serious concern regarding the safe use of your instrument, contact your authorized Miltenyi Biotec service provider or call Miltenyi Biotec Technical Support.

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1 Basic functions

⚠WARNING Read the chapter **Important safety information** in the MACSima System user manual as well as all safety information in this manual before operating the instrument. When processing infectious, radioactive, poisonous, or any other hazardous samples, always abide by the necessary safety precautions.

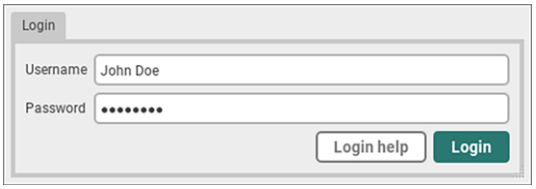
This software user manual applies to the MACSima System running MACS iQ View Software Control Module 1.0.

1.1 Switching on the instrument

1. Switch on the instrument. The power switch is located on the rear side of the instrument.
2. Tap the screen to boot the instrument and start the MACS iQ View Software Control Module.

1.2 Login

1. Enter a user name.
2. Enter your password.
3. Click the **Login** button.

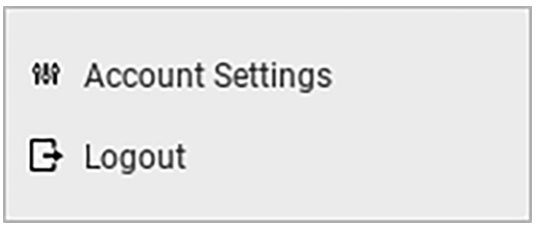


1.3 Switching between the software modules

Use the tabs at the bottom external monitor to switch between the MACS iQ View Software Control Module and the MACS iQ View Software Analysis Module.

1.4 Logout

1. Click the user name on the top indicator bar.
2. Click **Logout**.



1.5 Switching off the instrument

Under normal circumstances, it is unnecessary to switch off the instrument. In case of an error, or if cleaning and maintenance is required, switch off the instrument as follows:



1. Click the **System Off/Restart** button in the upper right corner of the top indicator bar to close the MACS iQ View Software Control Module.
2. Switch off the instrument using the power switch on the rear side of the instrument. If for any reason it is necessary to disconnect the power supply, unplug the power cable.

2
Graphical user interface

You can access most functions on the monitor (**Figure 2.1**) via the tabs **Dashboard**, **Sample Setup**, **Reagent Definition**, **Procedure Creation**, and **Experiment Planning** in the tab hub. Windows can be arranged by clicking the table function icons. More windows can be added to a tab by clicking on the corresponding menu buttons. Click the **Undo** button to reset the windows in the selected tab to the original position.

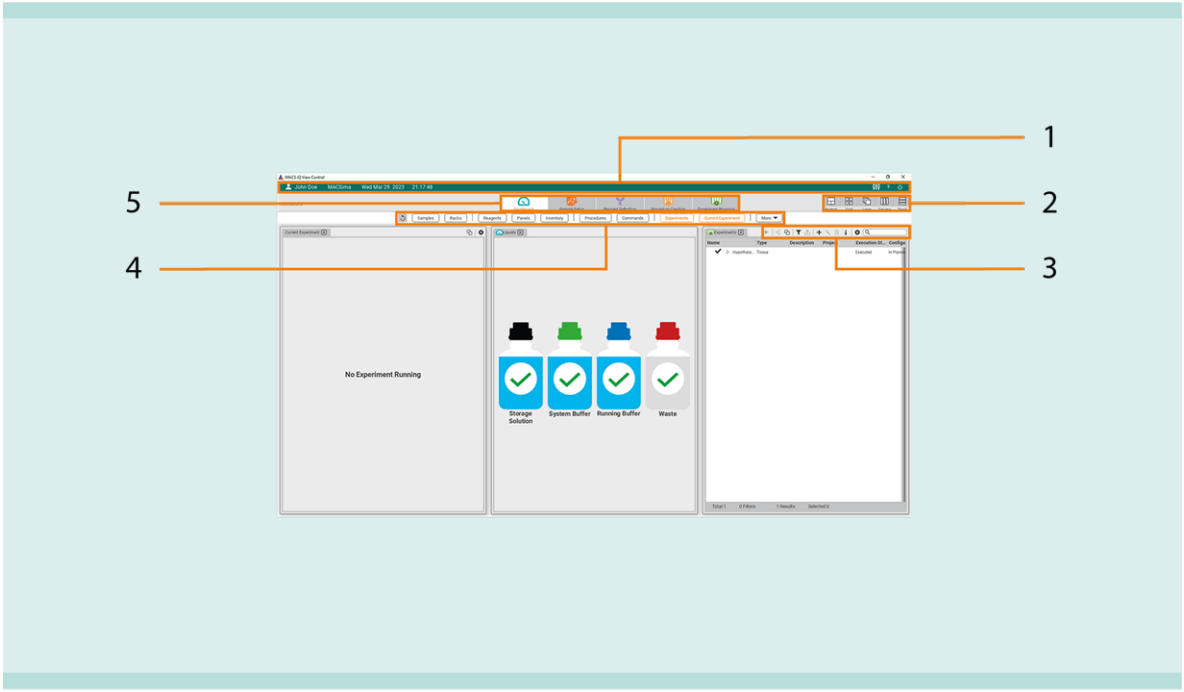


Figure 2.1: The MACS iQ View Software Control Module

1	top indicator bar	**4**	menu buttons
2	table functions	**5**	tabs
3	table header		

2.1 Top indicator bar

The currently logged-in user, the name of the instrument, date, and time are shown on the left-hand side of the top indicator bar. **Preferences**, **Help**, and **System Off/Restart** are shown on the right-hand side of the top indicator bar (**Figure 2.2**).



Figure 2.2: Top indicator bar

User	changes the **Account Settings** or **Logout**
Settings	opens the **Settings** window
Help	opens the **Help** window
System Off/Restart	shuts down or restarts the system

Table 2.1: The table function icons

2.2 Table functions

Arrange the windows automatically using the table functions (**Figure 2.3**). There are several ways to arrange the different windows.

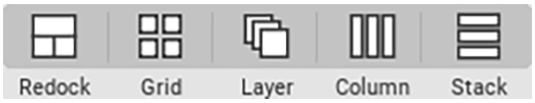


Figure 2.3: Table functions

Redock	redocks the open windows
Grid	arranges the open windows in a grid
Layer	arranges the open windows in layers
Column	arranges the open windows in columns
Stack	arranges the open windows in stacks

Table 2.2: The table function icons

2.3 Menu buttons

Open more windows in a tab element by clicking the corresponding menu buttons (**Figure 2.4**).



Figure 2.4: Menu buttons

2.4 Table header icons

The windows headers contain one or more icons depending on the context. With these icons the content of the windows can be adjusted (**Figure 2.5**).



Figure 2.5: Table header icons

Share items	shares the selected item(s) with another user
Detach	detaches the table
Filter	filters elements by different parameters
Lock	locks the window
Add	adds an item to the table
Edit	edits an item on the table
Delete	deletes an item on the table
Info	opens an info panel
Settings	changes the respective parameters of the table

Table 2.3: Table header icons

2.5 Tab elements

The main functions of the software can be accessed via the tabs in the tab hub (**Figure 2.6**). By default, the windows that are required for the working step are opened in each tab. Additional windows can be opened by clicking on the respective menu buttons.



Figure 2.6: Tab hub

2.5.1 Dashboard tab

By default, the MACS iQ View Software Control Module starts with the **Dashboard** tab (**Figure 2.7**) open.

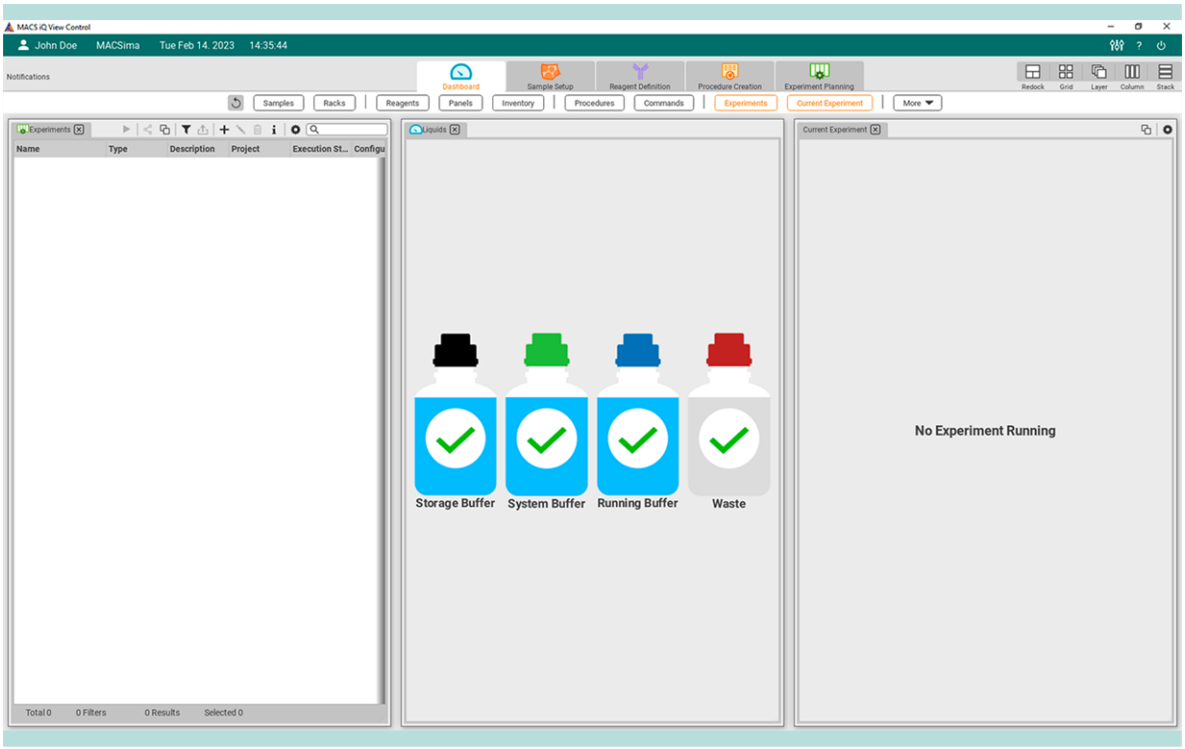


Figure 2.7: Default **Dashboard** tab view

By default, the **Dashboard** tab contains the **Experiments** window, the **Liquids** window, and the **Current Experiment** window. Click the **Dashboard** tab to get an overview of the instrument and experiments.

2.5.2 Sample Setup tab

The **Sample Setup** tab (**Figure 2.8**) gives an overview of the samples and racks.

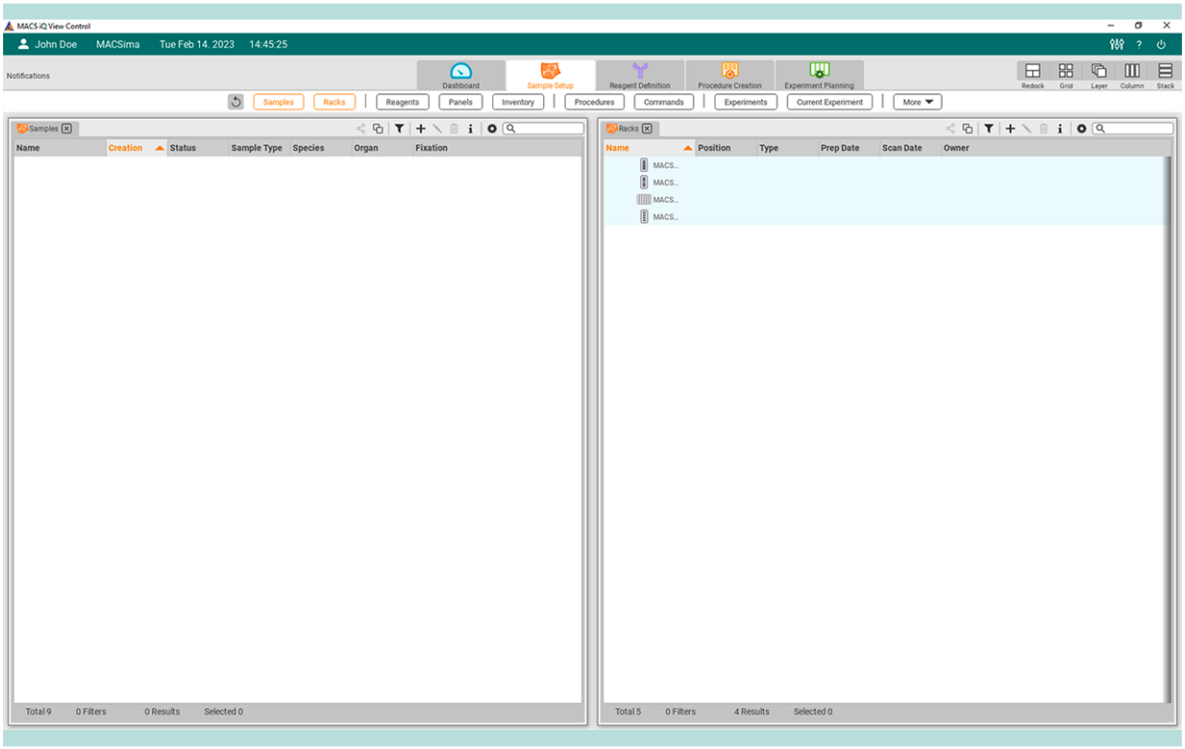


Figure 2.8: Default **Sample Setup** tab view

By default, the **Sample Setup** tab contains the **Racks** and the **Samples** window. Click the **Sample Setup** tab to create and manage your samples and racks.

2.5.3 Reagent Definition tab

The **Reagent Definition** tab (**Figure 2.9**) gives an overview of the available reagents and panels as well as the reagents that are in stock.

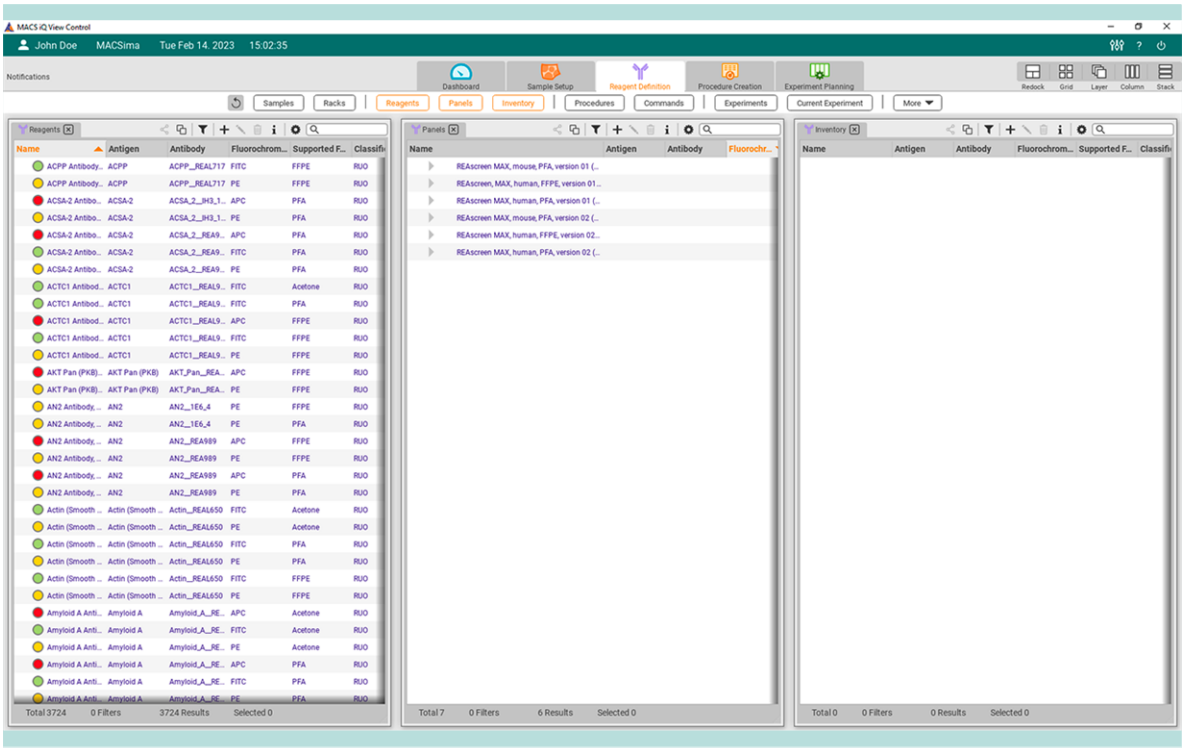


Figure 2.9: Default **Reagent Definition** tab view

The **Reagents** window lists all reagents available from Miltenyi Biotec as well as non-Miltenyi reagents you have added. The **Panels** window lists all panels available. The **Inventory** window can be used to list all reagents that are in stock.

2.5.4 Procedure Creation tab

The **Procedure Creation** tab (**Figure 2.10**) gives an overview of reagents, panels, and defined procedures as well as available commands.

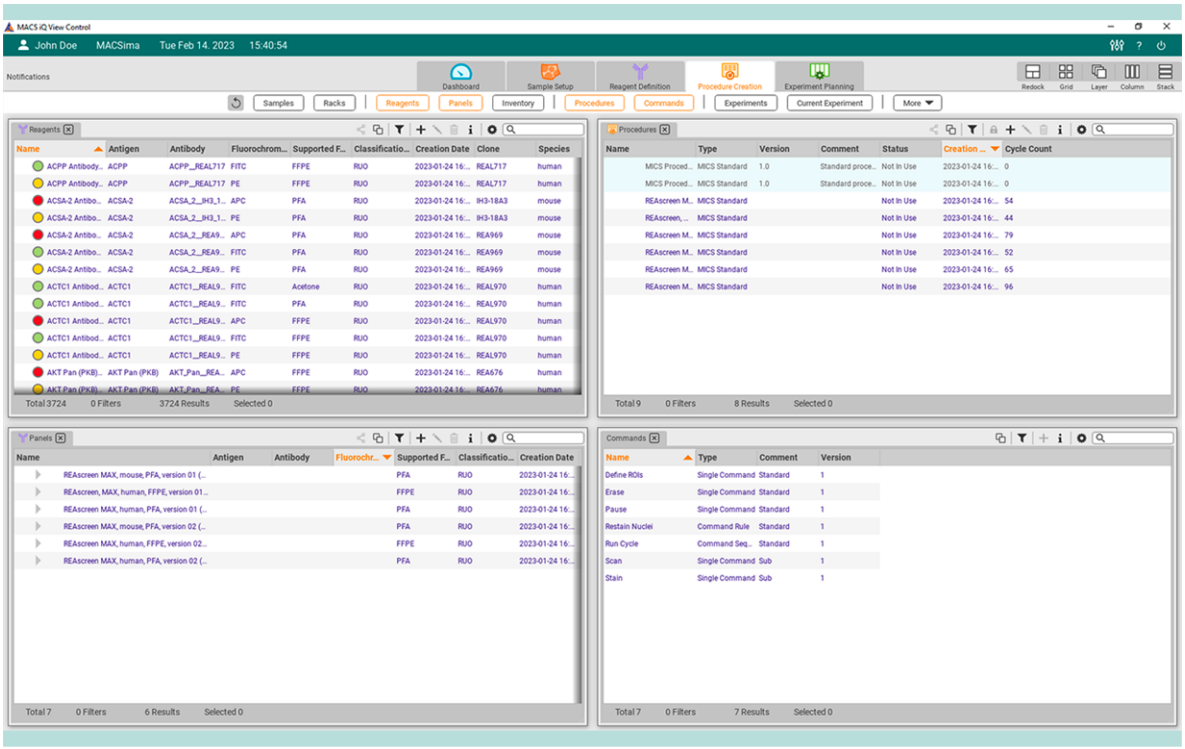


Figure 2.10: Default **Procedure Creation** tab view

The **Reagents** window lists all reagents available from Miltenyi Biotec as well as Non-Miltenyi reagents you have added. The **Panels** window shows all defined reagent panels and lets you design your own panel. The **Procedures** window shows all predefined procedures and lets you design your own procedures using the commands from the **Commands** window.

2.5.5 Experiment Planning tab

The **Experiment Planning** tab (**Figure 2.11**) gives an overview of the experiments, racks, panels, and procedures. In addition, new experiments can be created here.

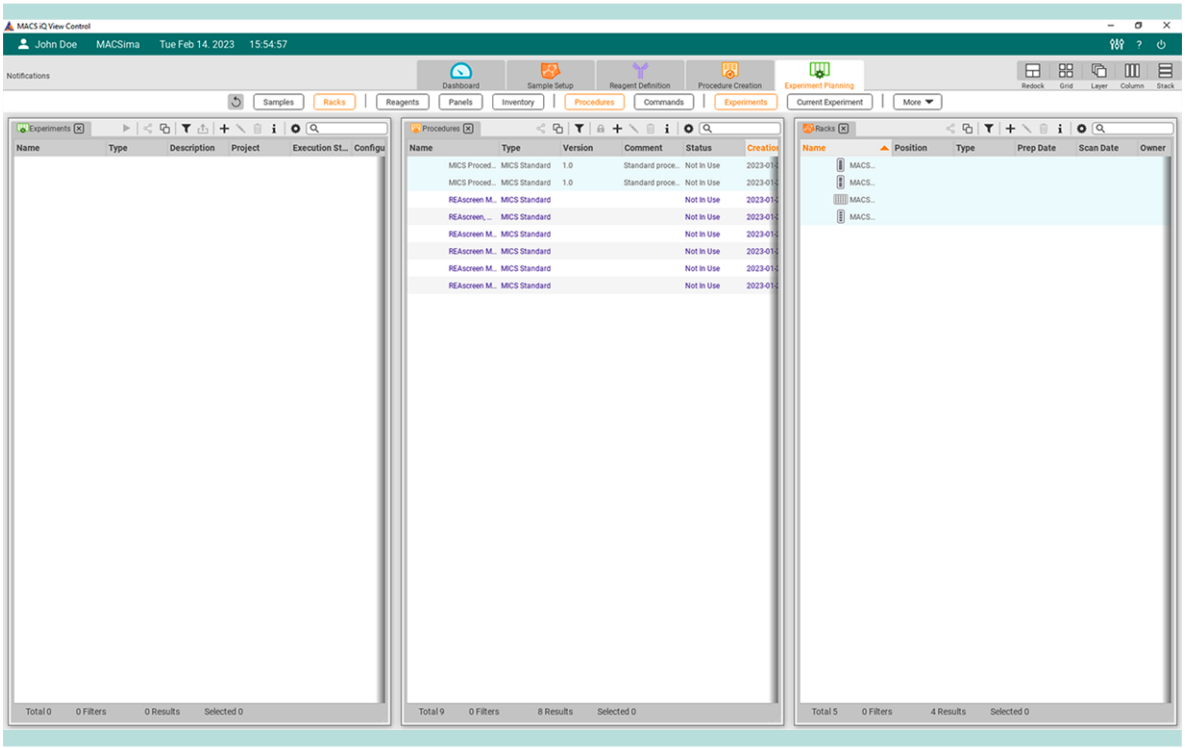


Figure 2.11: Default **Experiment Planning** view

The **Experiments** window lists all your experiments and experiments that have been shared with you. The **Procedures** window lists all available procedures for your experiment. The **Racks** window lists all created racks that can be used in your experiment. The **Panels** window lists all available reagent panels.

3 Setting up an experiment

Use only consumables recommended by Miltenyi Biotec. Before running an experiment, empty the waste container and ensure that all buffer and solution bottles are full.

3.1 Adding samples

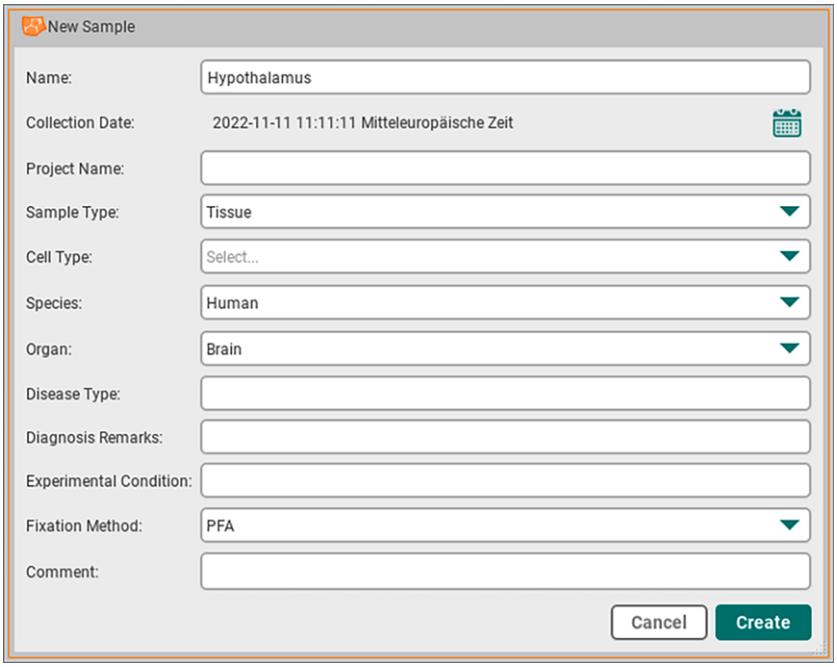
Before an experiment can be started, the samples must be recorded in the software.

1 Click the **Sample Setup** tab.



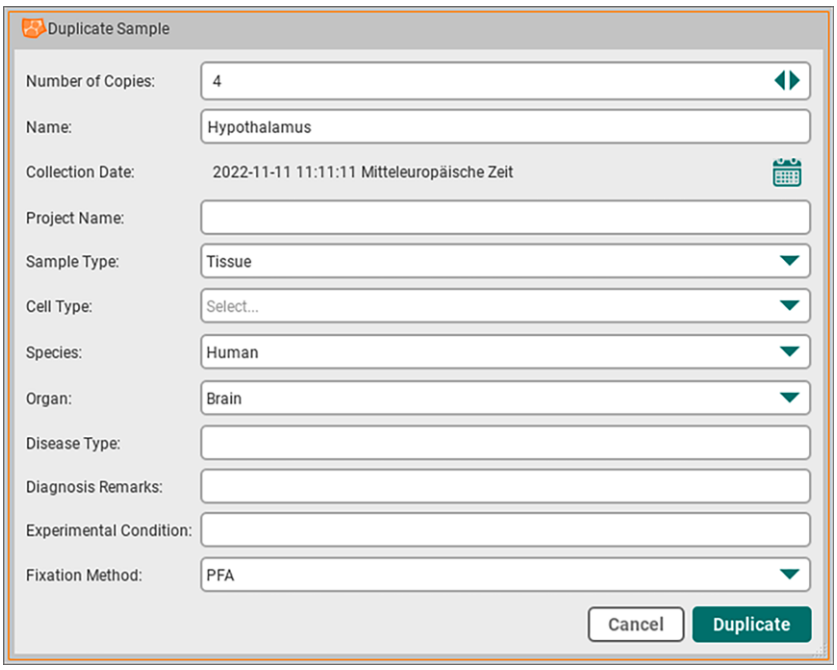
2 Click **Add** > **New Sample...** in the **Samples** table header to open the **New Sample** window.

3 Specify all the required fields for the experiment. The data fields **Sample Type**, **Species**, and **Fixation Method** are mandatory. It is recommended to collect as much information as possible.



4 Click the **Create** button to save your sample.

5 Optional: Right-click the newly created sample and click **Duplicate Sample...** to open the **Duplicate Sample** window. The original sample serves as a template.

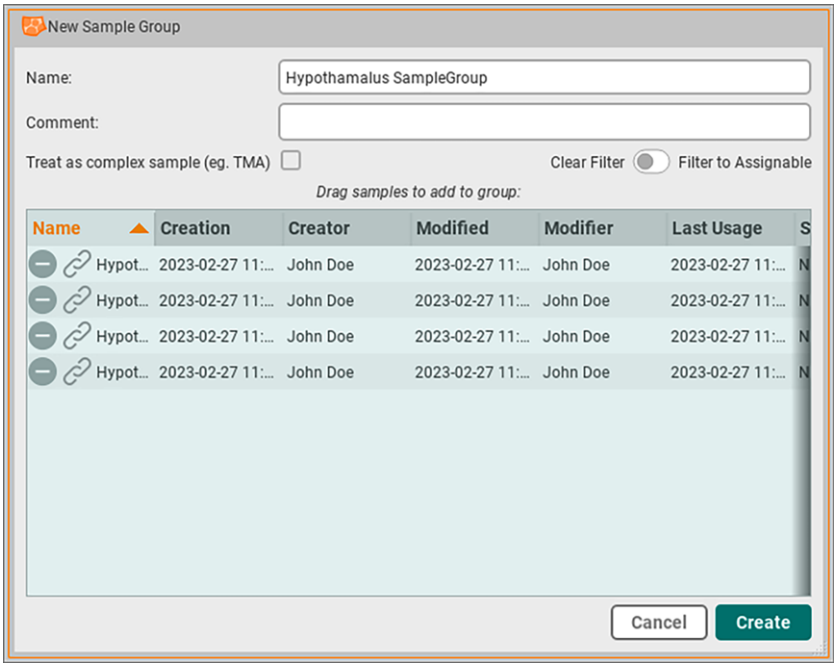


6 Optional: Enter the **Number of Copies** and edit the other fields as needed.

7 Optional: Click the **Duplicate** button to create the samples.

8 Optional: Control-click or Shift-click the samples and then right-click **New Sample Group** to create a sample group. A sample group is only meant to organize samples.

9 Optional: Check **Treat as complex sample** if the samples should be treated as part of one complex sample. A complex sample consists of several samples that are treated as one sample because they are located in one well.



10 Click the **Create** button to create the sample group.

3.2 Adding racks

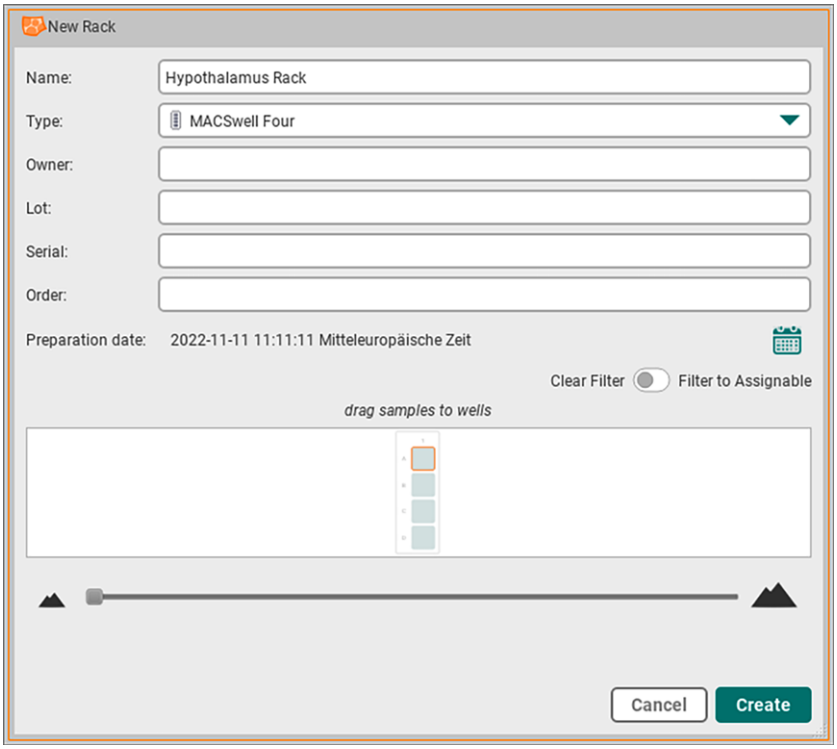
In this step, the racks are added to the experiment and the samples will be assigned to a well in the rack(s).

1 Click the **Sample Setup** tab.



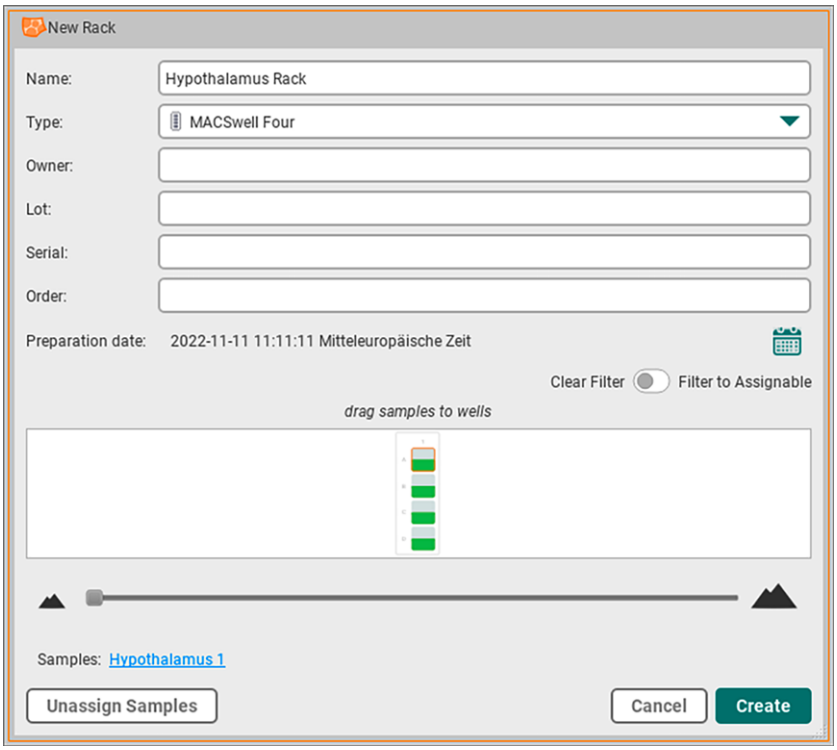
2 Click **Add** > **New Rack...** in the **Racks** table header to open the **New Rack** window.

3 Specify all the required fields for the experiment. The field **Type** is mandatory.



4 Select a sample in the **Samples** window and drag it to the selected well.

5 Repeat this step until all samples used in the experiment have been assigned to the correct well. Not all wells need to be used.



6 Click the **Create** button to create the new rack.

3.3 Managing the reagents

The software is delivered with a complete list of all pre-tested Miltenyi antibodies. This list can be extended with non-Miltenyi antibodies. Adding Miltenyi and non-Miltenyi reagents to the **Inventory** window is optional, but recommended to keep track of the antibodies in stock.

1 Click the **Reagent Definition** tab.

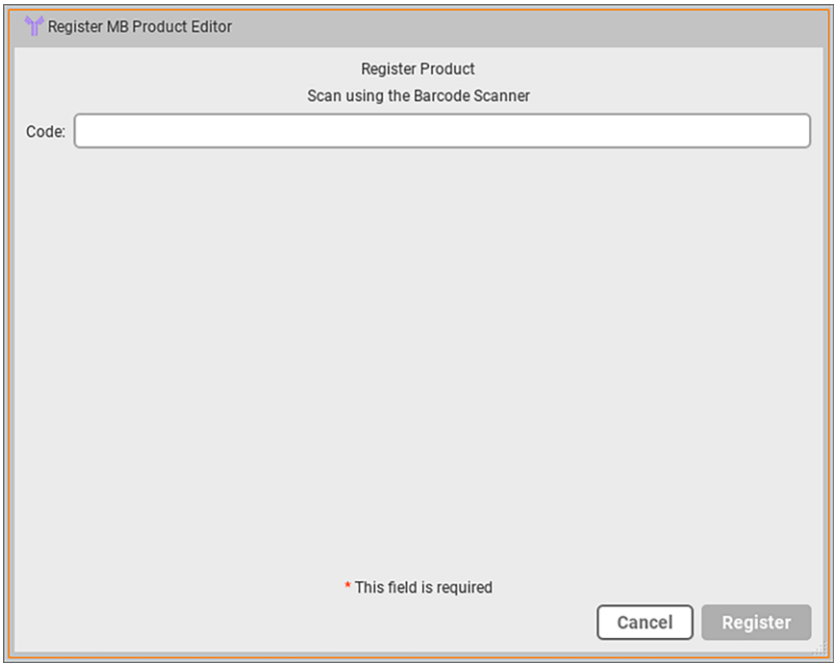


2 For information on adding Miltenyi Biotec reagents, see **Register a Miltenyi Biotec reagent below**, and for adding non-Miltenyi Biotec reagents to the inventory, see **Register a Non-Miltenyi Biotec reagent on the facing page**.

3.3.1 Register a Miltenyi Biotec reagent

1 All pre-tested Miltenyi Biotec antibodies can be found in the **Reagents** list. For information on Miltenyi Biotec's product database update, refer to **Updating the Miltenyi Biotec product database on page 45**.

2 Click **Add > Register MB Product...** in the **Inventory** table header to open the **Register MB Product Editor** window.

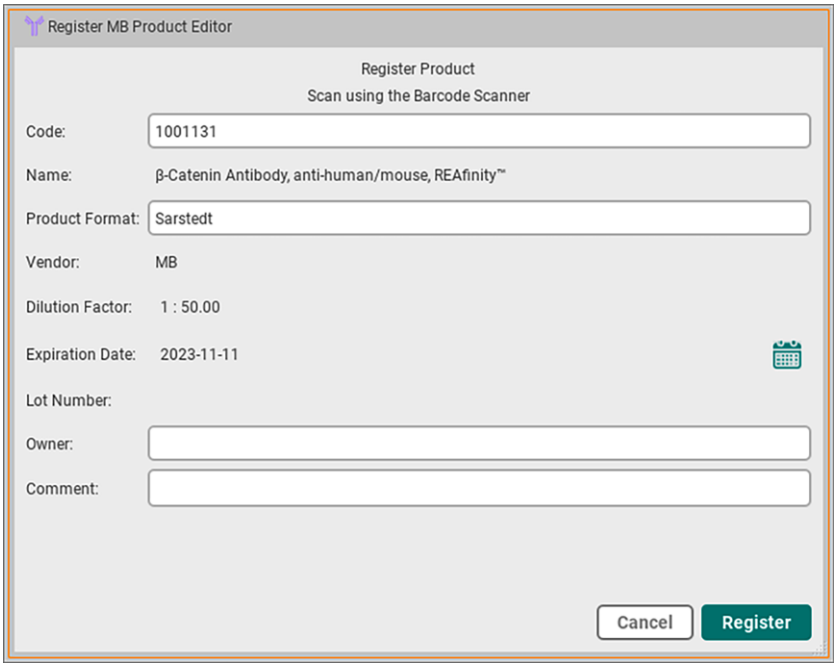


3 Hold the Mitenyi Biotec reagent vial in front of the 2D barcode reader. Make sure the 2D barcode is clearly visible.

4 Optional: Enter the barcode via the keyboard.

5 Optional: Press **Enter** to register the barcode.

6 Click the **Register** button.



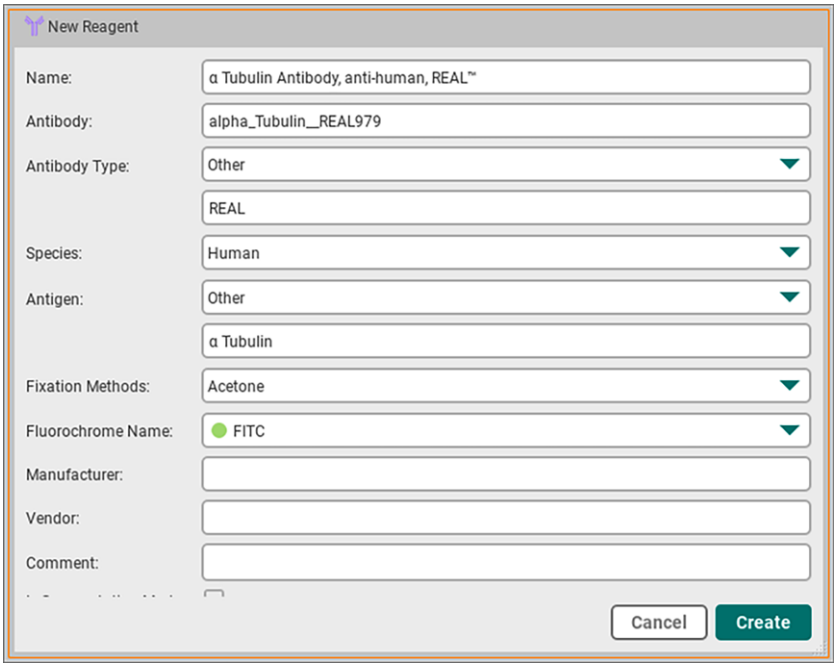
7 Click the **Register** button to add the reagent to the **Inventory** window.

3.3.2 Register a Non-Miltenyi Biotec reagent

To add non-Miltenyi antibodies, they must first be added to the **Reagents** list.

1 Click **Add > Create Non-MB Reagent...** in the **Reagents** table header to open the **New Reagent** window.

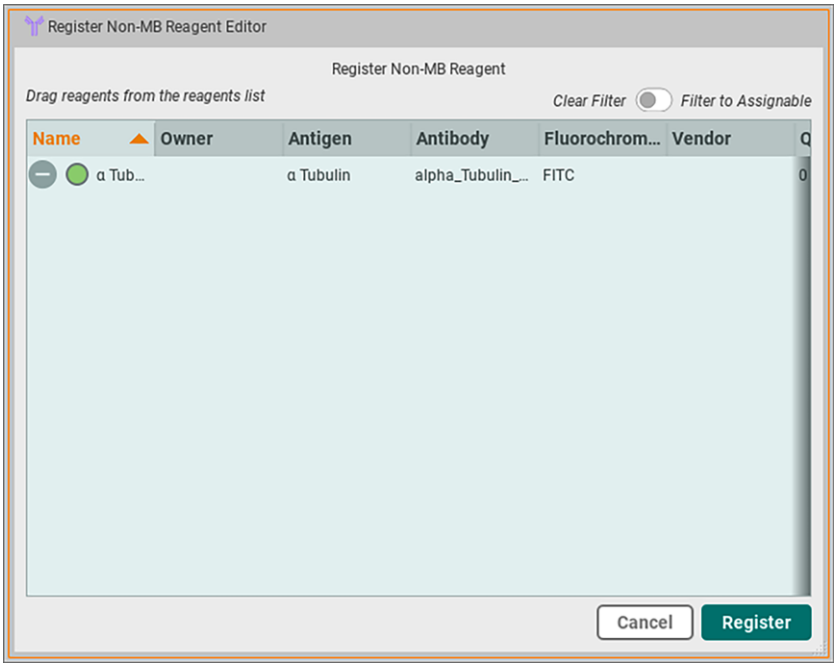
2 Specify all the required fields for your reagent. The fields **Antibody**, **Antibody Type**, **Species**, **Antigen**, **Fixation Methods**, and **Fluorochrome Name** are mandatory. It is recommended to collect as much information as possible.



3 Click the **Create** button to add the reagent to the **Reagents** window.

4 Optional: Click **Add > Register Non-MB Reagent...** in the **Inventory** table header.

5 Drag the newly created reagent to the **Register Non-MB Reagent Editor** window.



6 Click the **Register** button to add the reagent to the **Inventory** window.

3.4 Creating a reagent panel

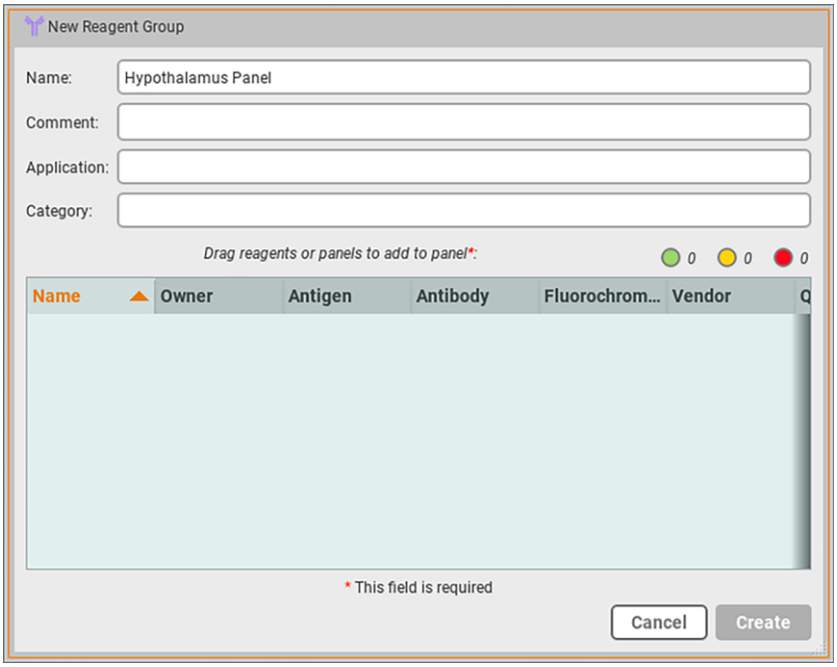
Creating a panel is optional but recommended if an established group of antibodies is used regularly.

1 Click the **Reagent Definition** tab.

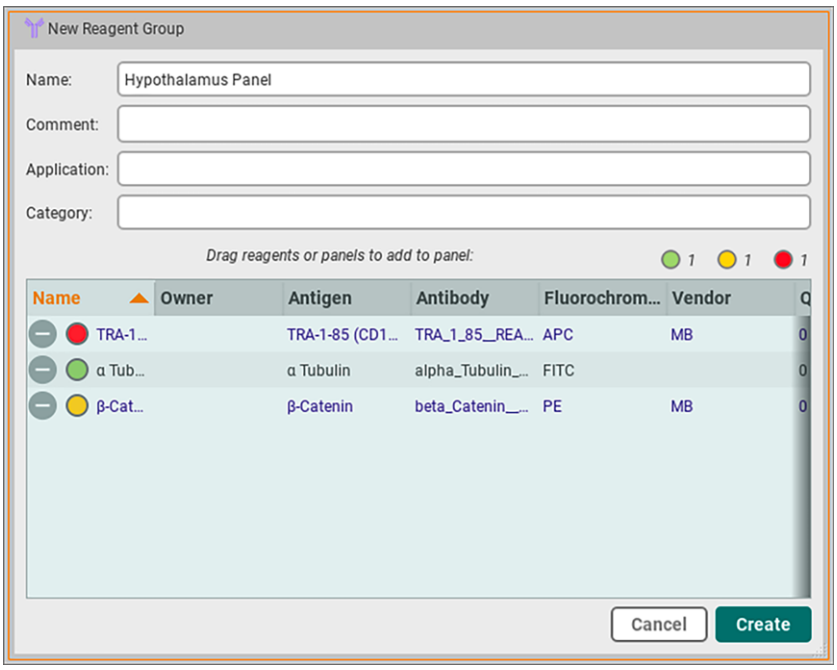


2 Click **Add > New Panel...** in the **Panels** table header.

3 Specify all the required fields for the panel in the **New Reagent Group** window.



4 Drag reagents from the **Reagents**, **Inventory**, and/or **Panels** windows to the **New Reagent Group** window.



5 Click the **Create** button to create the panel.

6 Optional: Click **Add > Extract panel from Procedure** to reuse the panel.

3.5 Creating a procedure

The **Procedures** window already contains templates for unstained and DAPI-prestained samples as well as procedures for all available REAscreen Antibody Panels. The unstained template still requires DAPI in a specific well, the DAPI-prestained template can be used directly. It is also possible to design a completely new procedure.

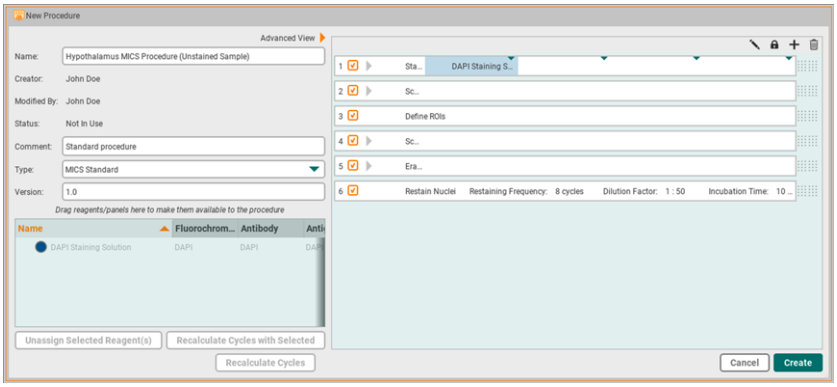
1 Click the **Procedure Creation** tab.



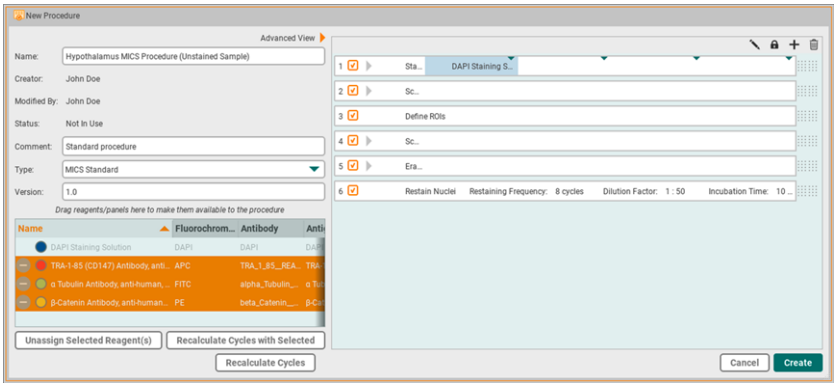
2 Select a template from the **Procedures** window.

3 Click **Add > Create From Template...** in the **Procedures** table header.

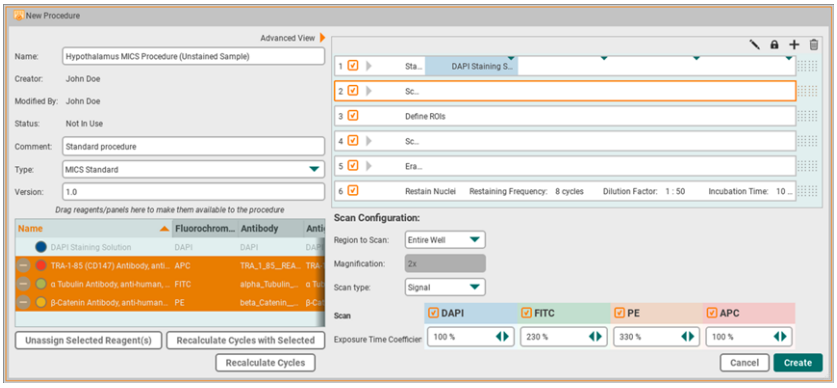
4 Enter the name for the panel in the **New Procedure** window.



5 Drag panels and/or reagents from the **Inventory**, **Panels**, and/or **Reagents** window to the **New Procedure** window.

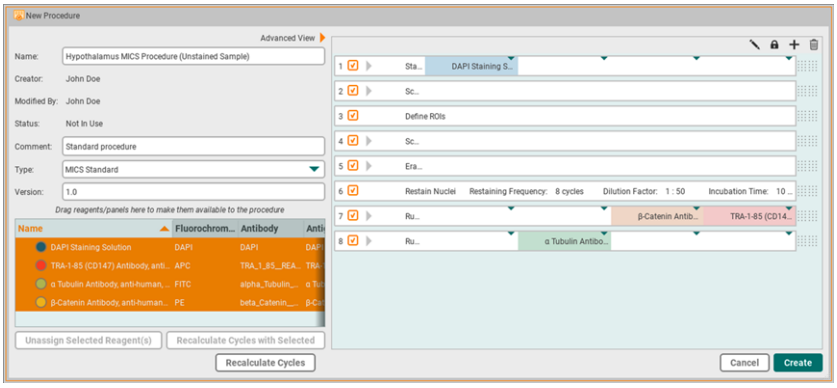


6 Optional: Adjust the numerical values (**Dilution Factor**, **Incubation Time**, **Exposure Time Coefficient**, **Erase Method**, **Bleach Energy**, and **Wash Dilution**) in each step of the procedure to suit your needs.



Any deviation from the recommended values are the responsibility of the user.

7 Click **Recalculate Cycles** to calculate a procedure.



8 Click the **Create** button to save the procedure.

3.6 Creating an experiment

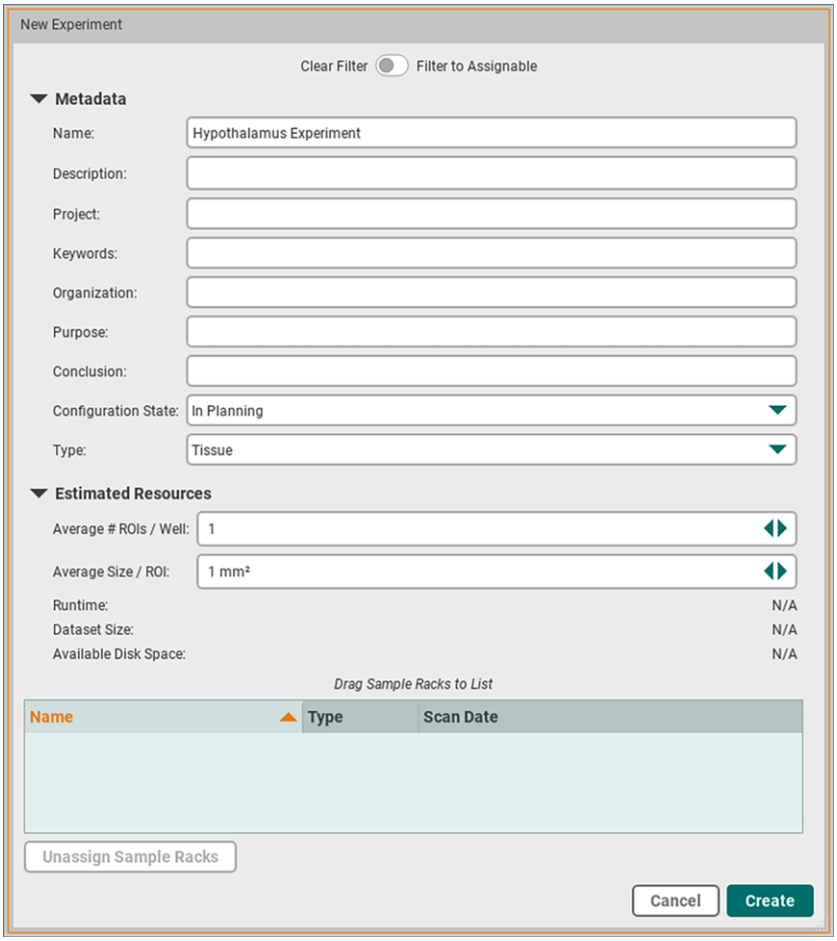
In this step, the previous inputs are combined into an experiment.

1 Click the **Experiment Planning** tab.

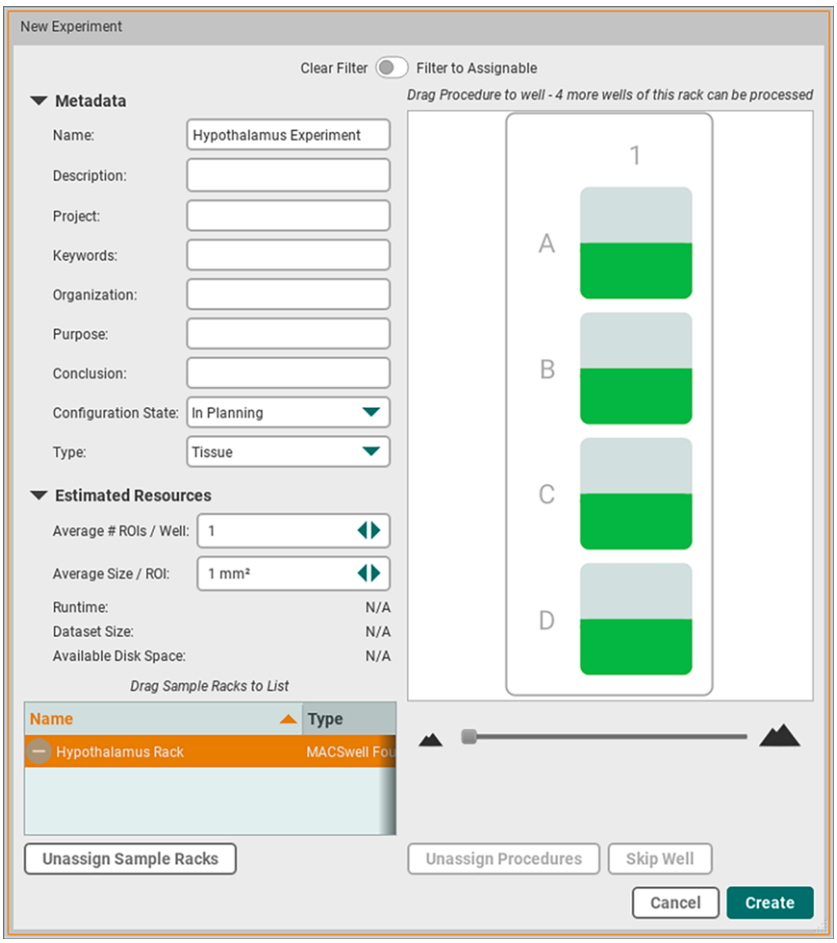


2 Click **Add > New Experiment...** in the **Experiments** table header.

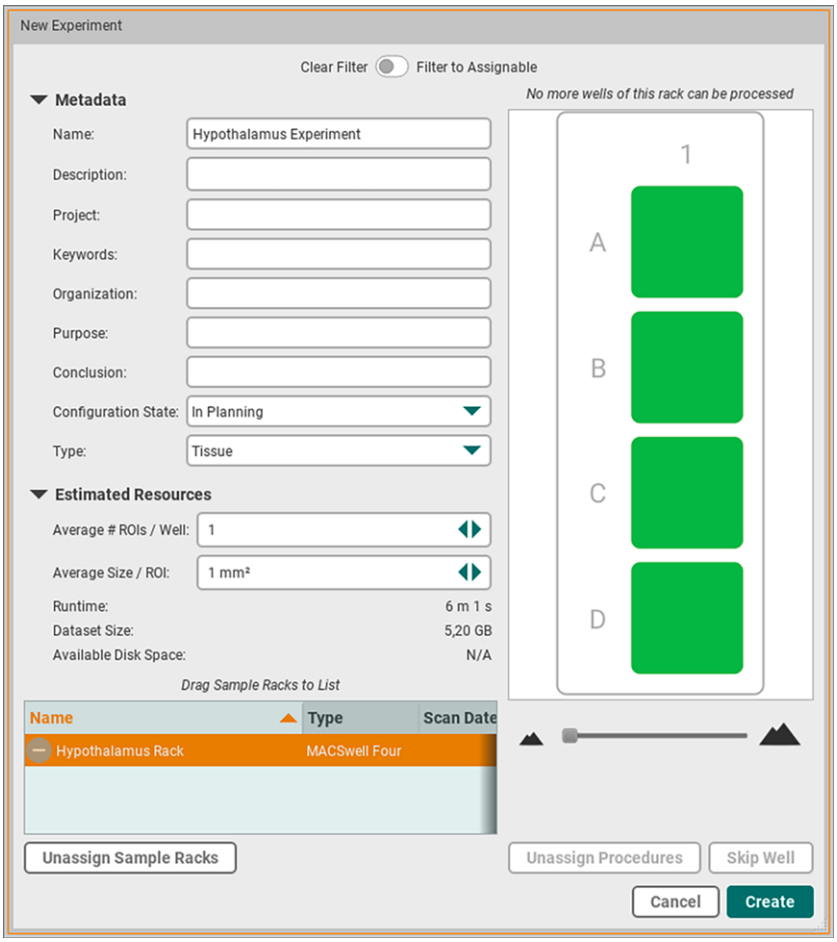
3 Specify all the required fields for the experiment. It is recommended to collect as much information as possible.



4 Drag the rack(s) from the **Racks** window to the **New Experiment** window. Only racks with assigned samples can be added.



5 Drag the procedure(s) from the **Procedures** window to the wells used in the **New Experiment** window. Procedures can be assigned to multiple wells with different samples. Samples that are not used do not need to be assigned a procedure.

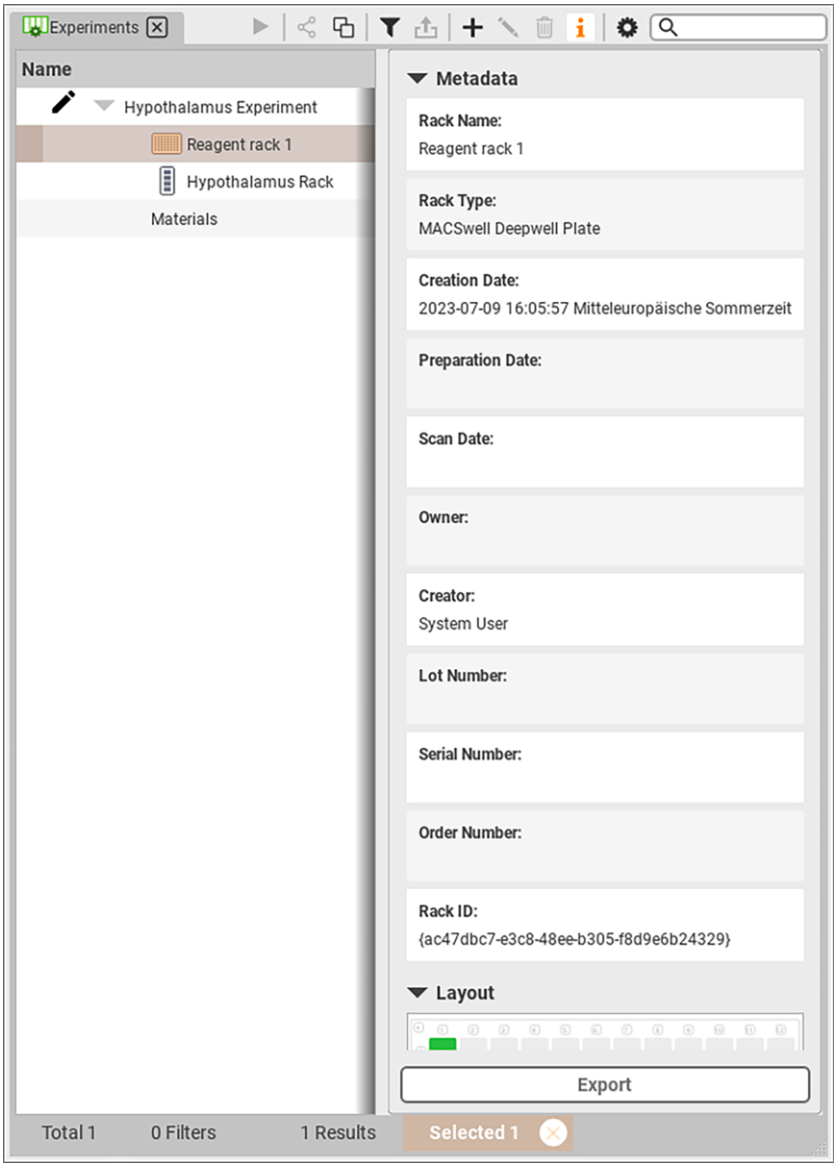


6 Optional: Click the well(s) to see the assigned procedure and sample.

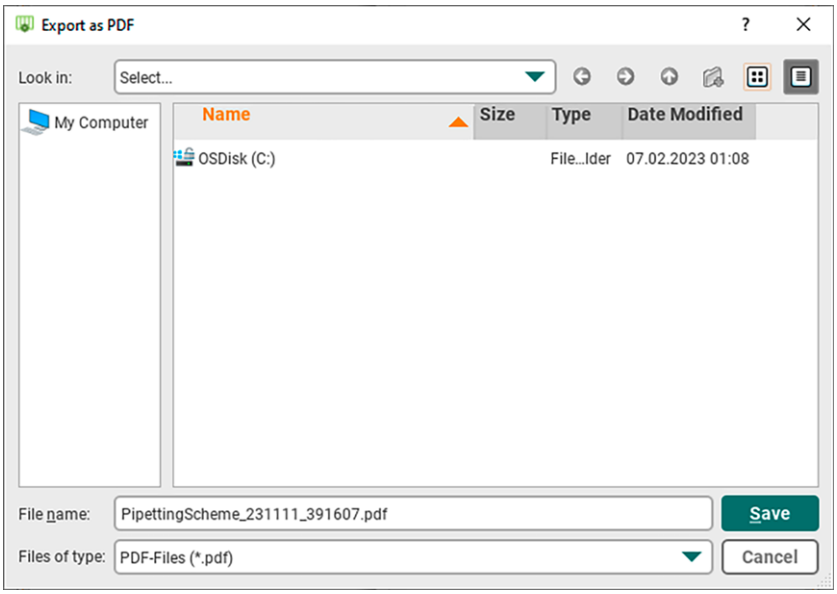
7 Optional: Specify the **Average # ROIs / Well** and the **Average Size / ROI** to get a **Runtime** and **Dataset Size** estimate.

8 Click the **Create** button to save the experiment.

9 Click the **Info** button in the **Experiments** table header.



10 Click the **Export** button to save the pippeting scheme as PDF.



3.7 Running an experiment

1 Click the **Experiment Planning** tab.



2 Click the **Run** button in the table header, or right-click the experiment and click **Run Experiment...** to open the **Loading...** window.

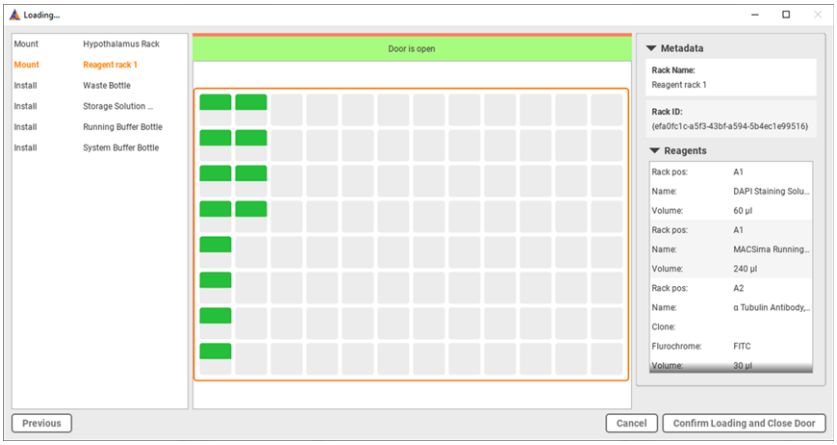
3 Hold the rack(s) in front of the 2D barcode reader. Make sure the 2D barcode is clearly visible.

4 Optional: Enter **Lot Number** and **Order Number** for your rack(s).



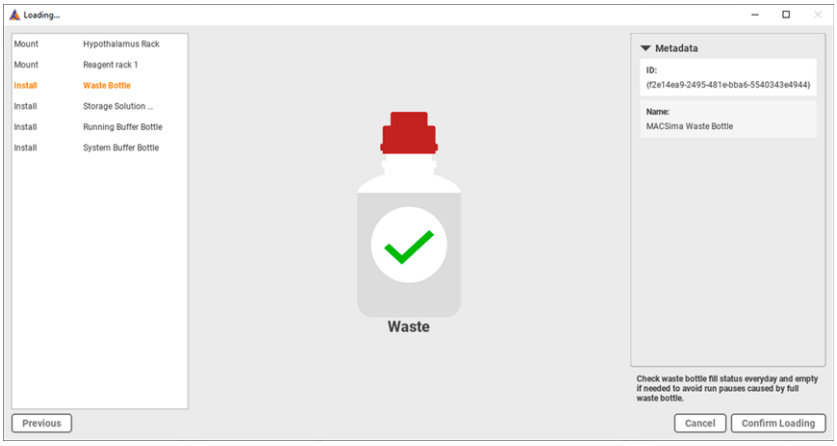
5 Place the sample racks(s) on the indicated imaging stage rack position(s). Refer to the **MACSima System hardware user manual** for details. The stage is moved into the correct position by the instrument.

6 Click the **Confirm Loading and Close Door** button. The door on the instrument closes and opens again as indicated by the animation on-screen.



7 Place the reagent rack. Refer to the **MACSima System hardware user manual** for details.

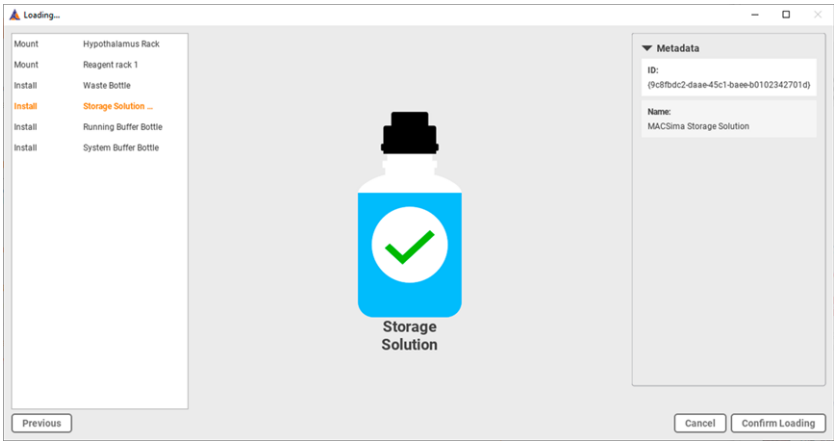
8 Click the **Confirm Loading and Close Door** button. The door on the instrument closes and opens again as indicated by the animation on-screen.



9 Empty the waste bottle.

Check the fill status of the waste bottle daily. Empty if necessary to avoid run pauses caused by a full waste bottle.

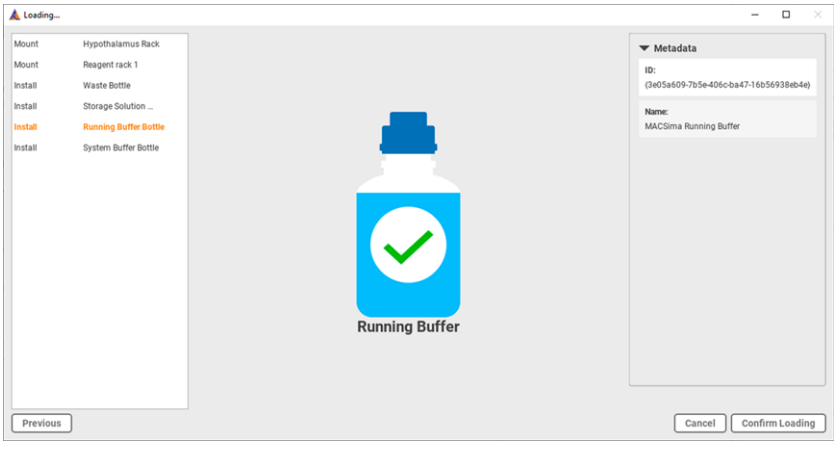
10 Click the **Confirm Loading** button.



11 Check the storage solution.

Check fill status of the storage solution daily. Replace the bottle if necessary.

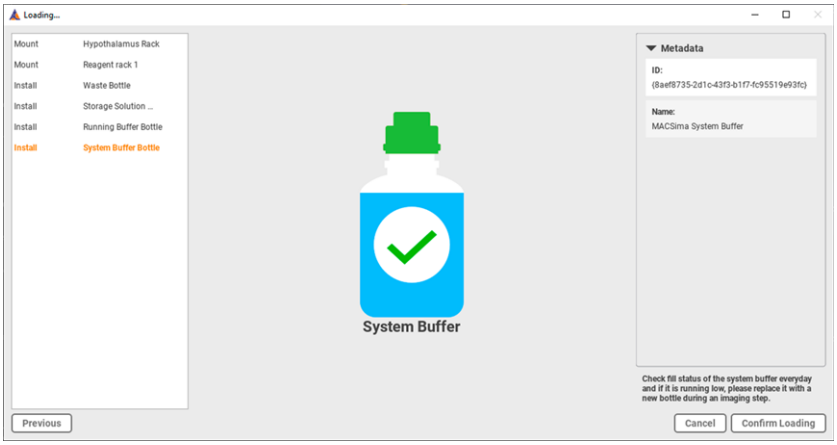
12 Click **Confirm Loading**.



13 Check the running buffer.

Check the fill status of the running buffer daily. Replace the bottle if necessary.

14 Click the **Confirm Loading** button.



15 Check the system buffer.

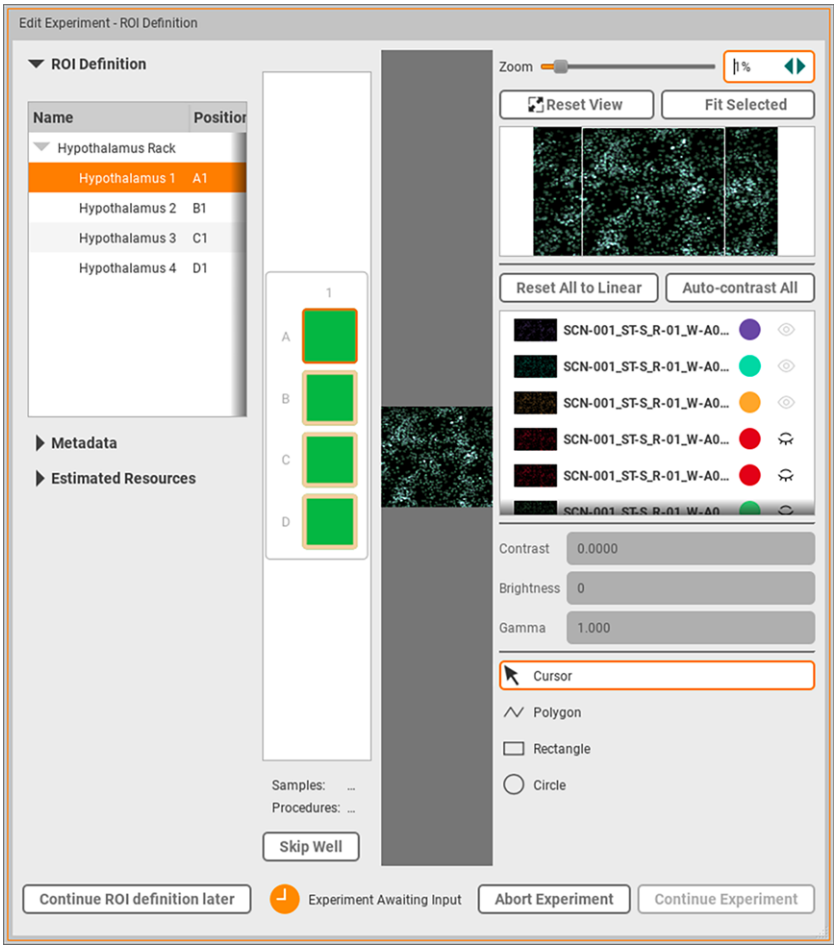
Check the fill status of the system buffer daily. Replace the bottle during the imaging step if necessary.

16 Click the **Confirm Loading** button.



17 Click the **Start Experiment** button.

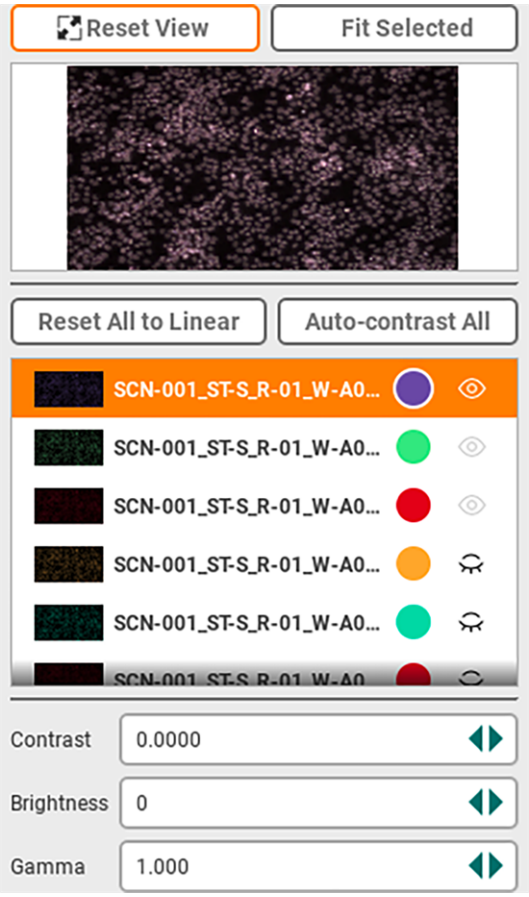
18 Wait until the preview scan has finished. The **Edit Experiment - ROI Definition** window opens.



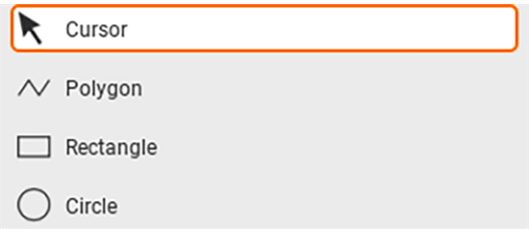
19 Zoom into the preview picture of the first well by using the **Zoom** slider or your mouse wheel.



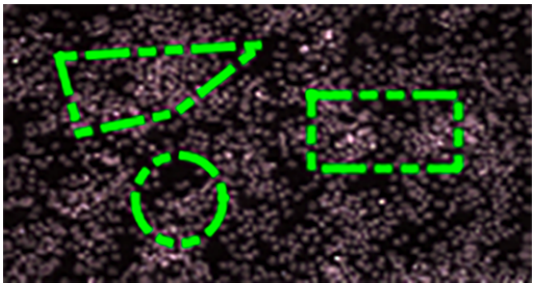
20 Adjust the contrast, brightness, and gamma values.



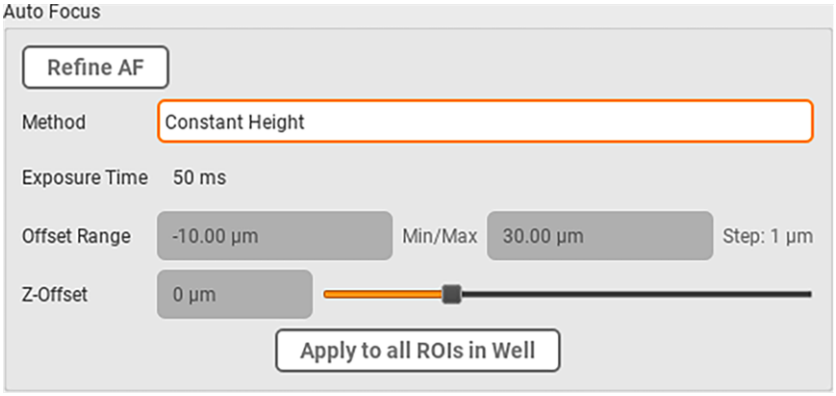
21 Select a drawing tool (**Polygon**, **Rectangle**, or **Circle**).



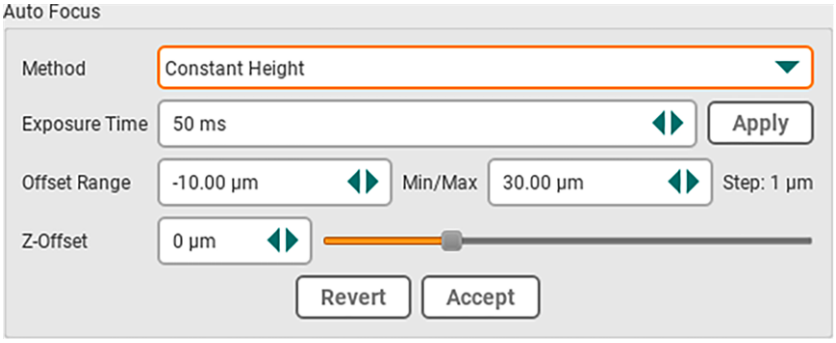
22 Draw one or more regions of interest (ROI).



23 Check autofocus for all ROIs in the first well.



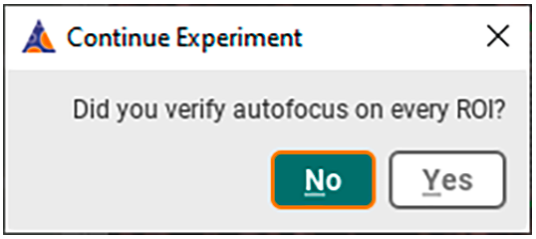
24 Optional: Click **Refine AF** to set the **Method**, **Exposure Time**, **Offset Range**, and **Z-Offset**.



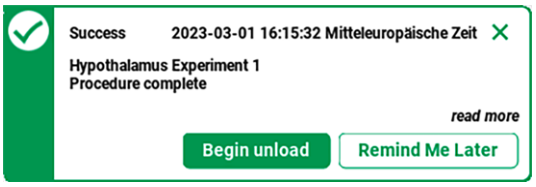
25 Click the **Accept** button to apply the auto focus settings.

26 Repeat steps **19**– **25** for all wells in the experiment.

27 Click the **Continue Experiment** button to start the measurement. A message reminds to set the auto focus for all ROIs.



28 Wait until the experiment has finished.



Depending on the scope and complexity of the experiment, several days may pass. Check the fill status of the buffers daily. Replace the bottle during the imaging step if necessary.

29 Click the **Begin unload** button to open the **Unloading...** window.



30 Remove the sample racks(s) on the indicated imaging stage rack position(s). Refer to the **MACSima System hardware user manual** for details. The stage is moved into the correct position by the instrument.

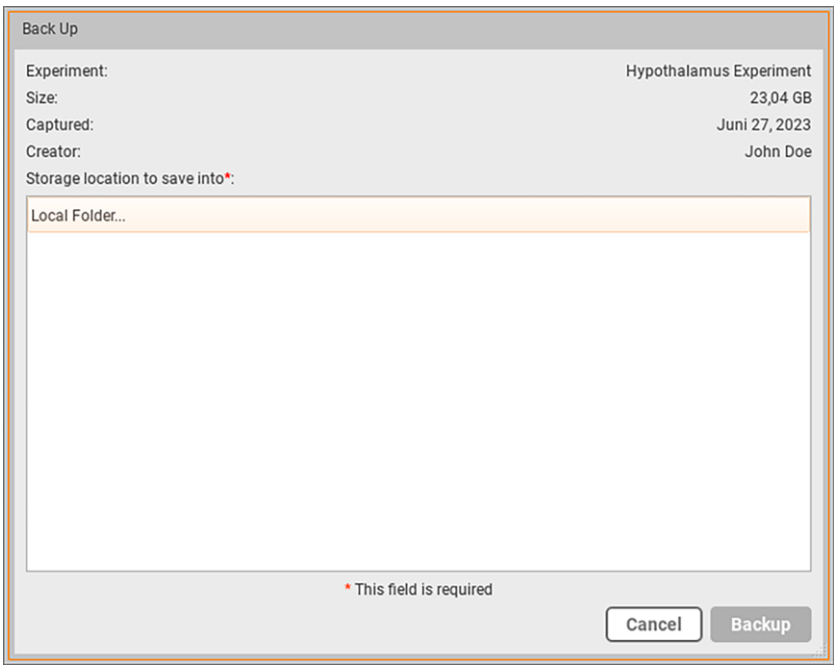
31 Click the **Confirm Unloading and Close Door** button. The door on the instrument closes and opens again as indicated by the animation on-screen.



32 Remove reagent rack. See **MACSima System hardware user manual** for details.

33 Click the **Confirm Unloading and Close Door** button. The door on the instrument closes and the instrument is now in standby.

34 Optional: Right-click the executed experiment and select **Back-up...** to create a backup of the raw and processed images.



Notice: Ensure that a backup has been created before deleting an experiment. Deleting an experiment deletes all measurement data.

35 Optional: The data analysis can be continued on the MACSima System with the MACS iQ View Software Analysis Module. Alternatively, the backup data can be analyzed on another workstation.

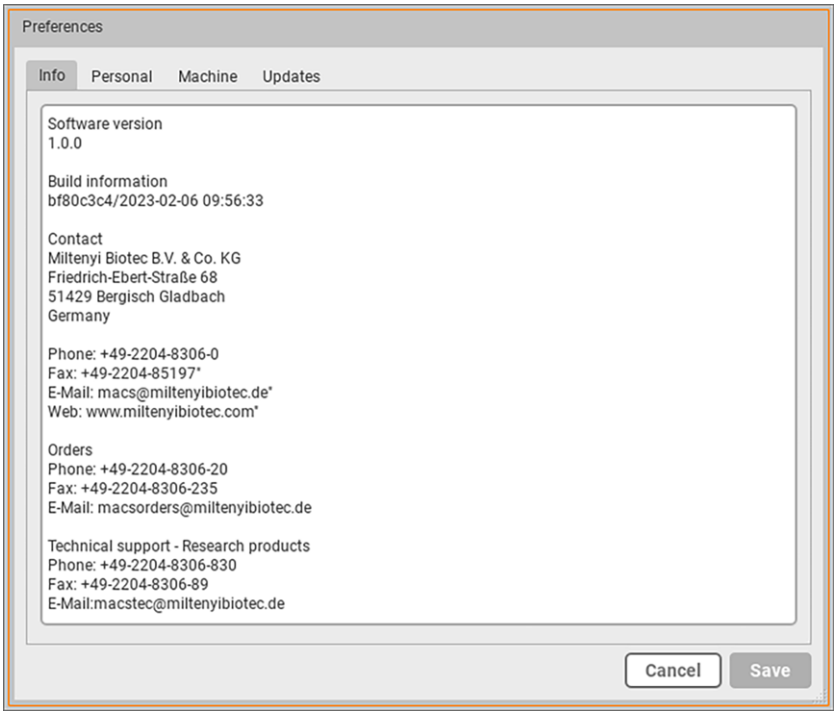
4 Preferences

Click **Preferences** on the right of the top indicator bar to learn more about the MACSima System, manage users, set preferences, and install updates.

Some of the preferences are not displayed for all roles.

4.1 Info

Preferences opens with the **Info** tab. All relevant information about the software version and Miltenyi Biotec contact information can be found here.

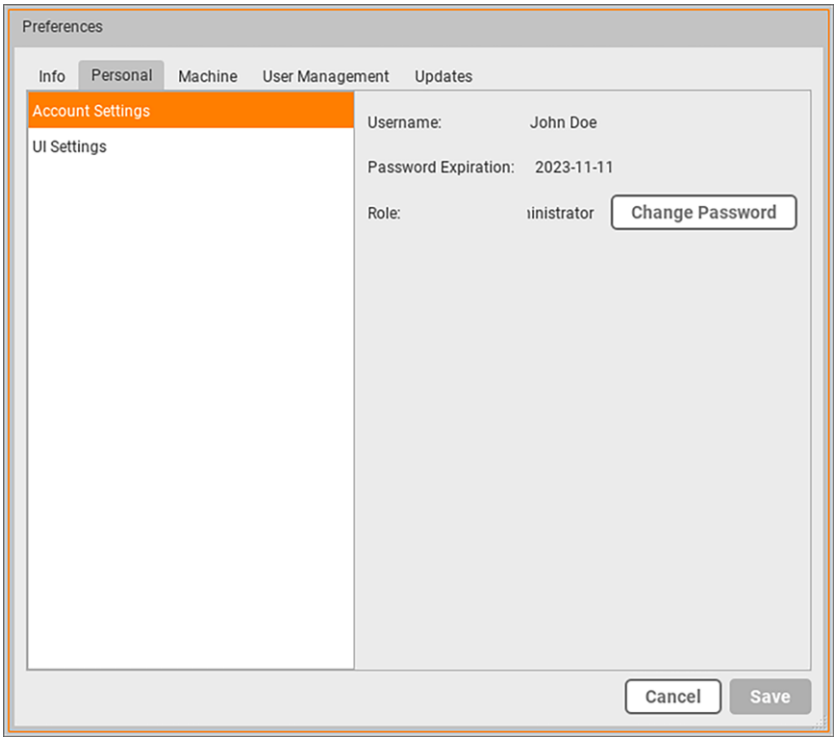


4.2 Personal

The **Personal tab** is used to change the **Account Settings** and **UI Settings**.

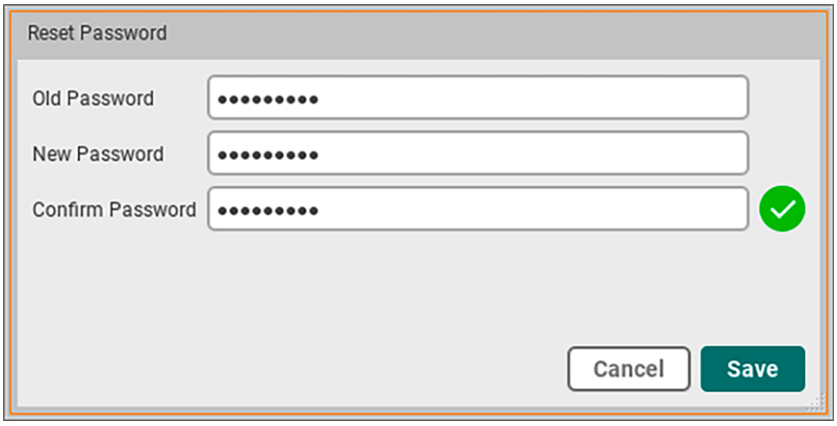
4.2.1 Account Settings

1 Click the **Personal** tab and select **Account Settings**.



2 Click **Change Password** to change the password. The password word expires after a certain date shown under **Password Expiration**.

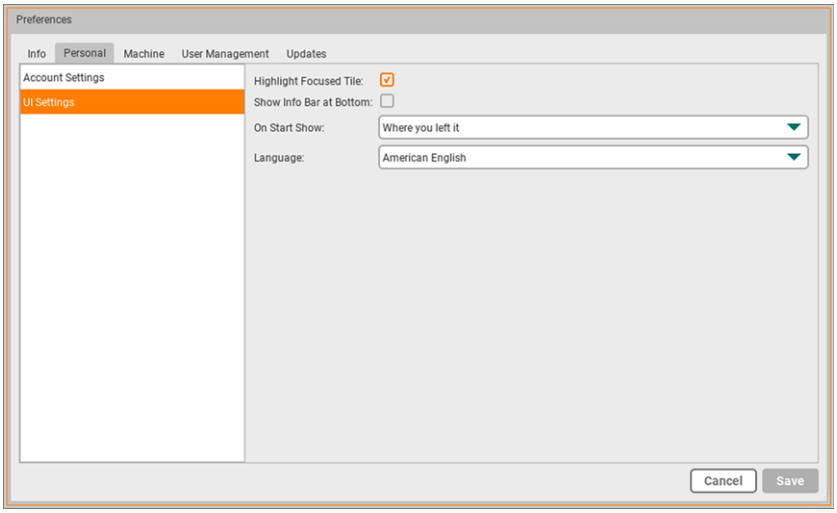
3 Enter the **Old Password**, the **New Password**, and **Confirm Password**. The password must be at least eight characters long, contain a capital letter, a number, and a special character.



4 Click the **Save** button to save the new password.

4.2.2 UI Settings

1 Click the **Personal** tab and select **UI Settings**.



2 Select **Show Info Bar at Bottom** to move the top indicator bar to the bottom of the screen.

3 Select **Where you left it** or **Dashboard** in the **On Start Show** menu to either start where you left or move to the **Dashboard** tab on your next login.

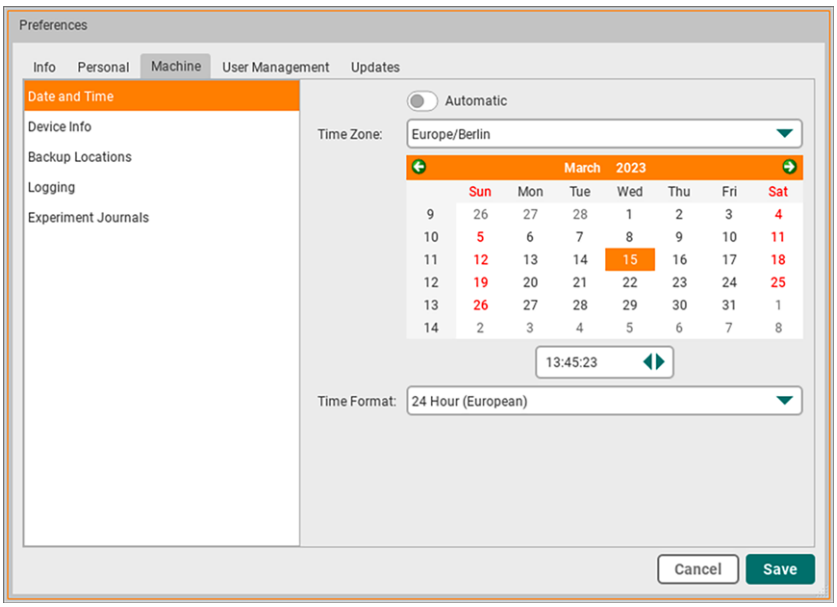
4 Select your preferred language in the **Language** menu (currently the only available language is **American English**). This setting also affects the keyboard layout.

4.3 Machine

The **Machine** tab is used to change the **Date and Time**, **Device Info**, **Backup Locations**, **Logging**, and **Experiment Journals**.

4.3.1 Date and Time

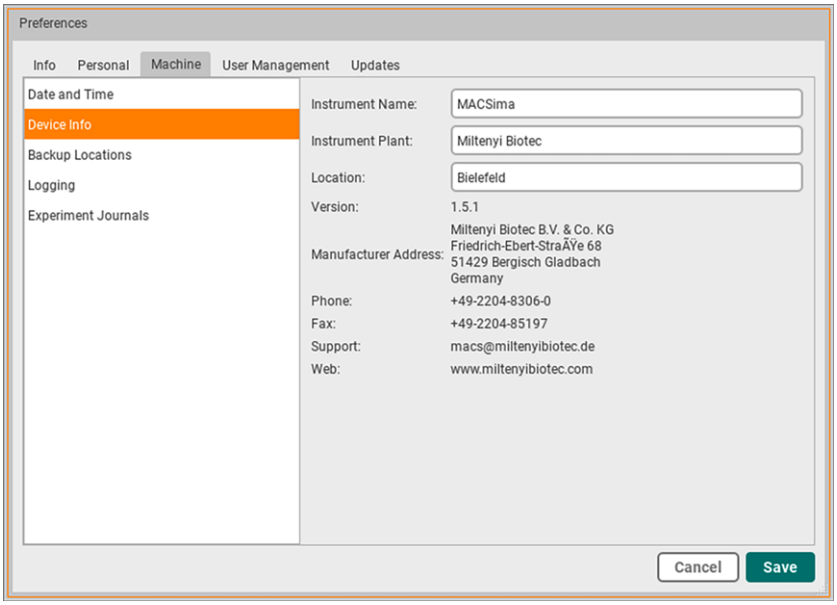
1 Click the **Machine** tab and select **Date and Time**.



2 Set the **Automatic** slider or change the **Time Zone**, **Date**, **Time**, and **Time Format** manually.

4.3.2 Device Info

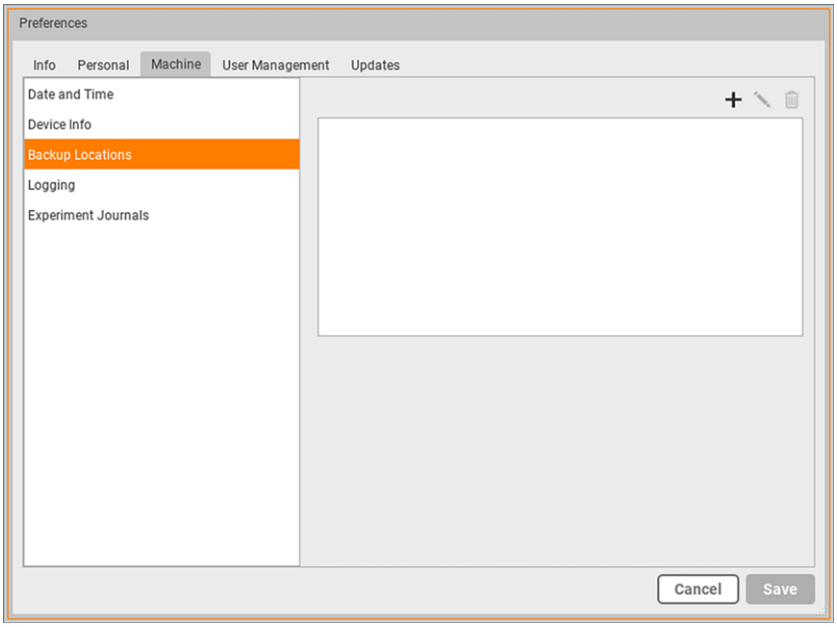
1 Click the **Machine** tab and select **Device Info**.



2 Enter the **Instrument Name**, **Instrument Plant**, and **Location**.

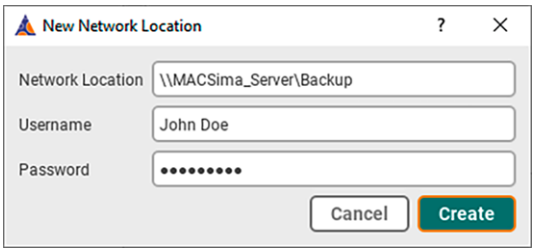
4.3.3 Backup Locations

1 Click the **Machine** tab and select **Backup Locations**.



2 Click **Add** to open the **New Network Location** window.

3 Enter **Network Location**, **Username**, and **Password**.

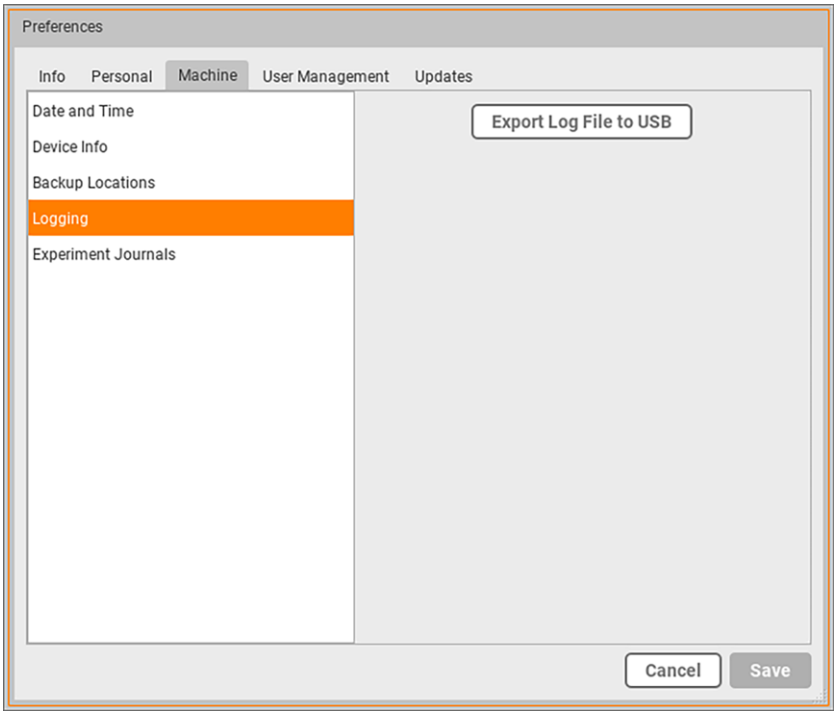


4 Click the **Create** button to save the location.

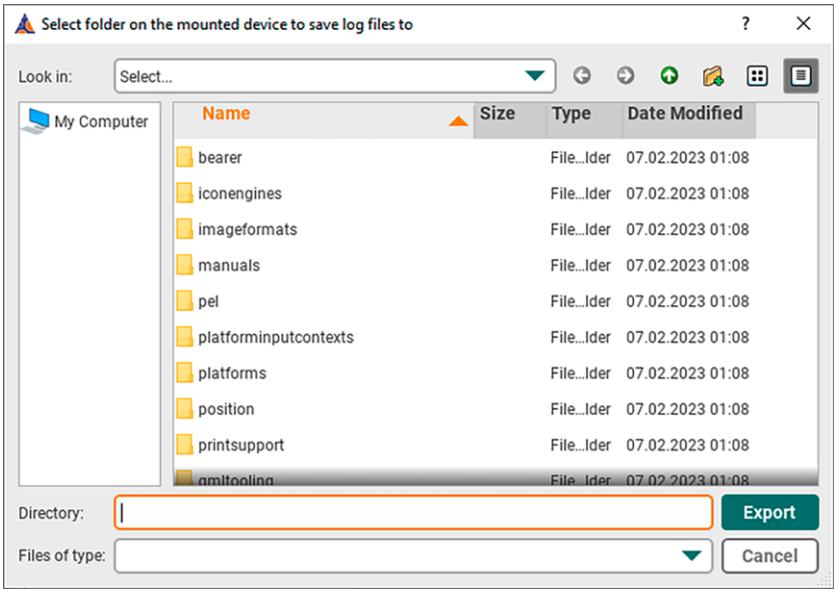
The **Experimental Data Backup** must be set up with the help of the IT department before use.

4.3.4 Logging

1 Click the **Machine** tab and select **Logging**.

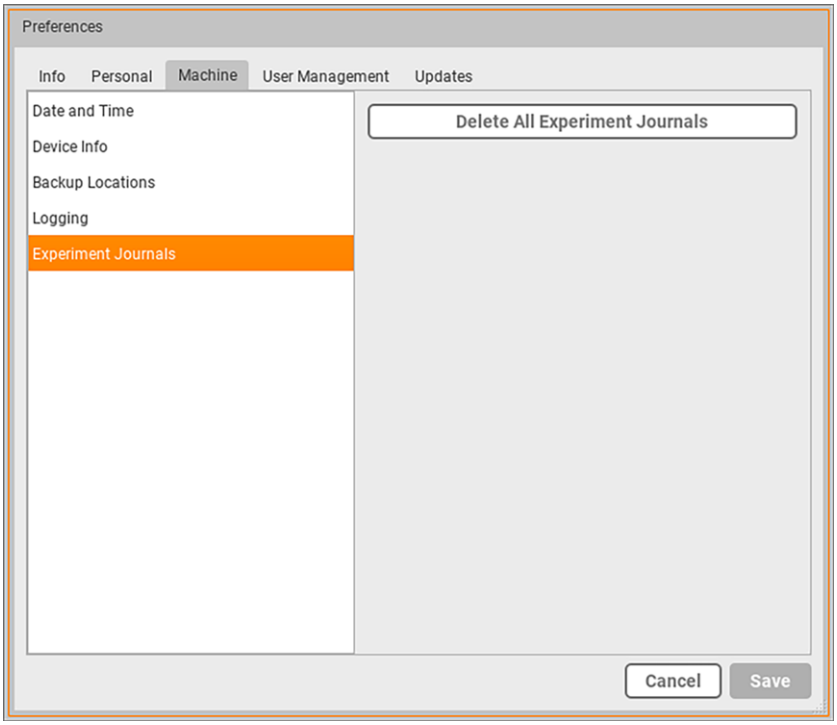


2 Click **Export Log File to USB** and select the mounted USB mass storage device and folder.



4.3.5 Experiment Journals

1 Click the **Machine** tab and select **Experiment Journals**.



The experiment journals do not normally need to be deleted. Among other things, they can be used to continue interrupted experiments.

4.4 User Management

The **User Management** tab is used to change the **Users** und **Roles** settings. By default, the MACS iQ View Software Control Module has three user roles: Administrator, Operator, and Researcher. The user rights of these roles are listed in **Table 4.1**–**Table 4.3**. New roles can be added under **User Management** > **Roles** (**Roles on page 43**).

	Read	Copy	Create	Update	Delete	Execute
Sample	×	×	×	×	×	-
Reagent	×	×	×	×	×	-
Panel	×	×	×	×	×	-
Rack	×	-	×	×	×	-
Procedure	×	×	×	×	×	-
Experiment	×	×	×	×	×	×

Table 4.1: Administrator user rights

Administrators have additional rights that have nothing to do with the experiments.

	Read	Copy	Create	Update	Delete	Execute
Sample	×	×	×	×	×	-
Reagent	×	×	×	×	×	-
Panel	×	×	×	×	×	-
Rack	×	-	×	×	×	-
Procedure	×	×	×	×	×	-
Experiment	×	×	×	×	×	×

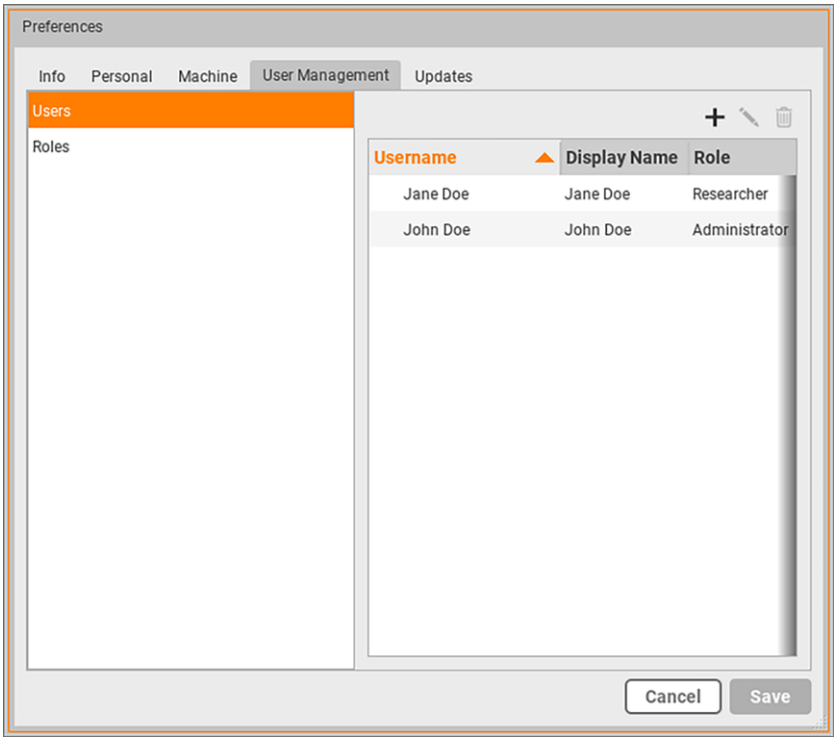
Table 4.2: Researcher user rights

	Read	Copy	Create	Update	Delete	Execute
Sample	×	-	-	-	-	-
Reagent	×	-	-	-	-	-
Panel	×	-	-	-	-	-
Rack	×	-	-	-	-	-
Procedure	×	-	-	-	-	-
Experiment	×	-	-	-	-	×

Table 4.3: Operator user rights

4.4.1 Users

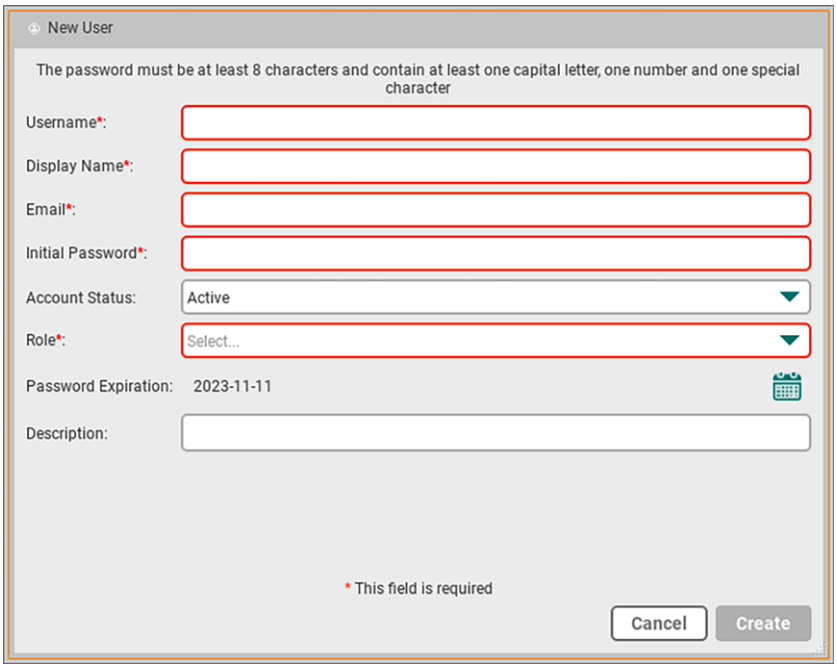
1 Click the **User Management** tab and select **Users**.



Adding users

1 Click **Add** > **Add User...** in the **Users** table header.

2 Specify all the required fields for the new user. The data fields **User Name**, **Email**, **Initial Password**, and **Role** are mandatory.

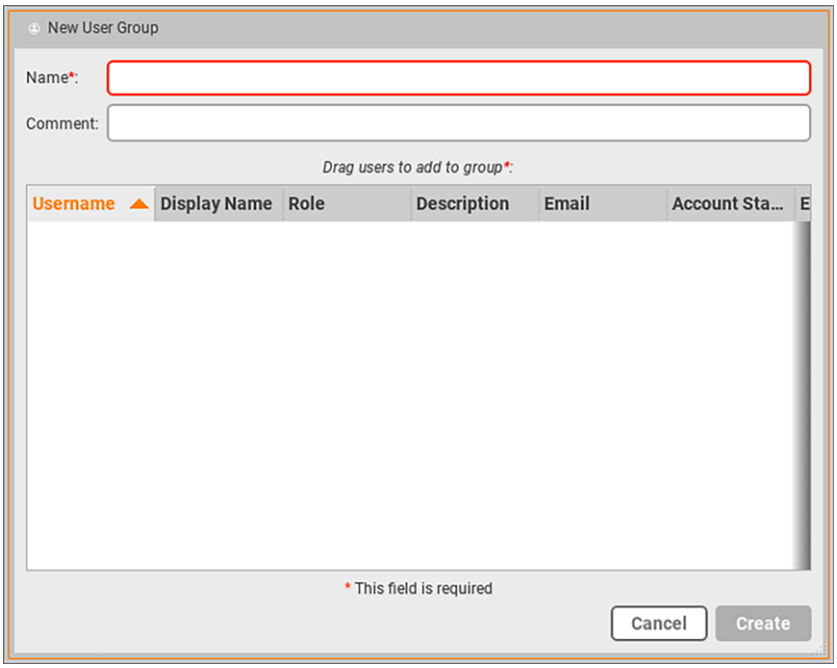


3 Click the **Save** button to save the new user.

Creating user groups

1 Click **Add** > **Add User Group...** in the **Users** table header.

2 Fill in all the required data fields for the new user group.

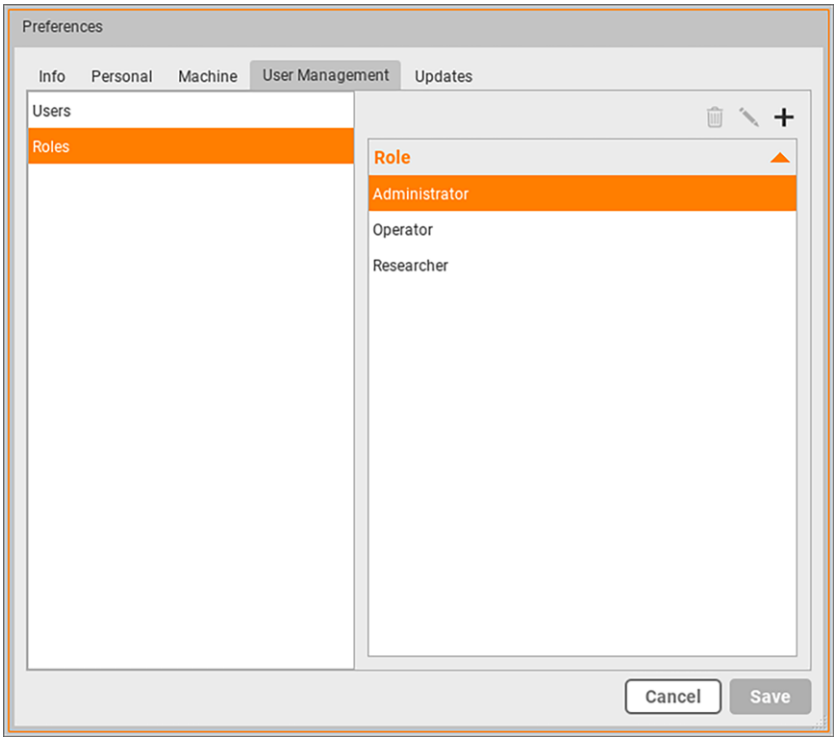


3 Drag users from the **Users** window to the **New User Group** window. Rights for users can be assigned in user groups.

4 Click the **Save** button to save the new user group.

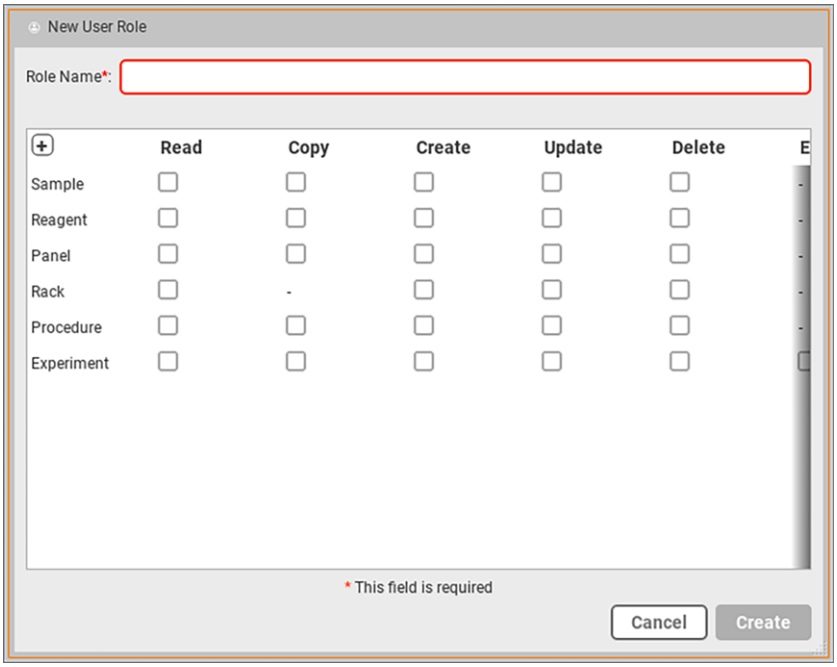
4.4.2 Roles

1 Click the **User Management** tab and select **Roles**.



2 Click **Add** in the **Roles** table header.

3 Specify the **Role Name** and select the permission boxes for the new role.



4 Click the **Save** button to save the role.

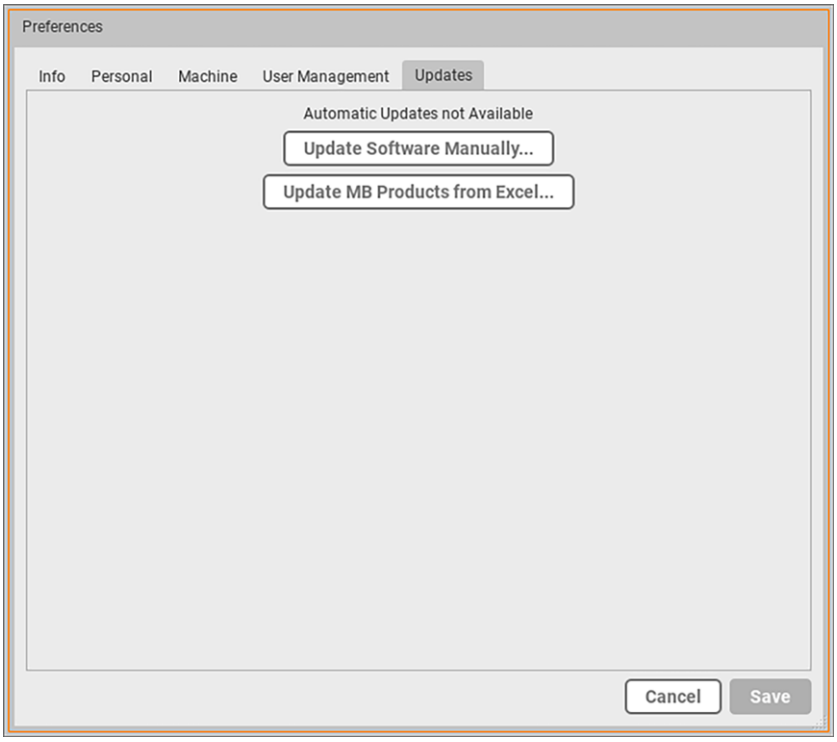
4.5 Updates

The **Updates** tab is used to update the software and the Miltenyi Biotec products database. Automatic updates are not available at the moment.

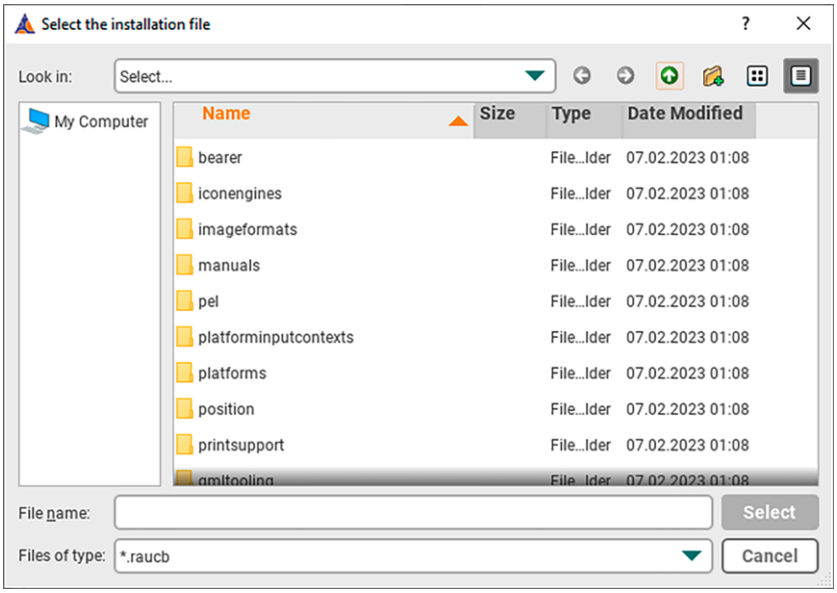
4.5.1 Updating the software

1 Click **Preferences** in the top indicator bar.

2 Click the **Updates** tab.



3 Click the **Update Software Manually** button.

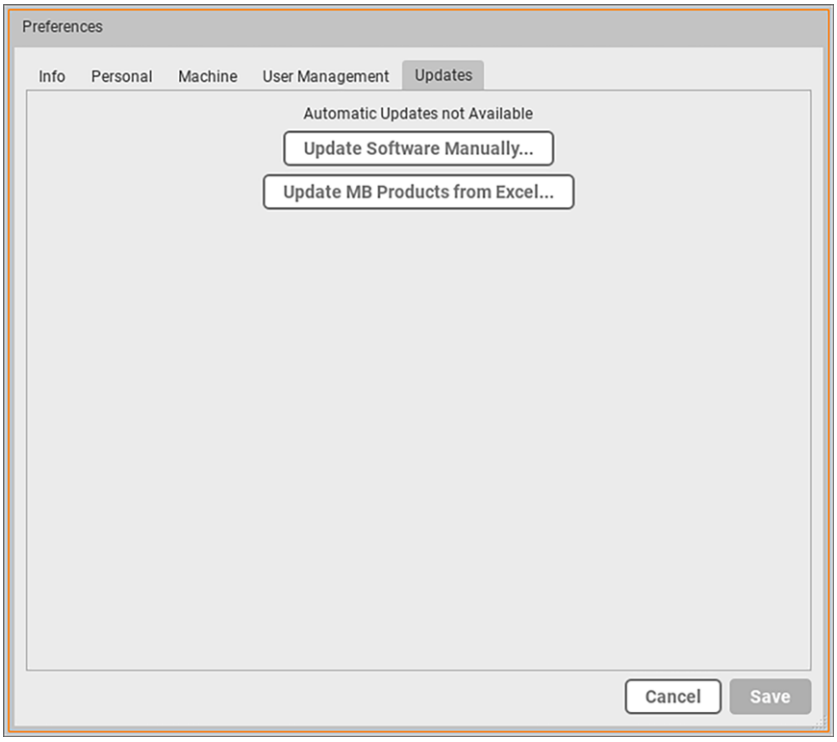


4 Select the update file and click the **Select** button.

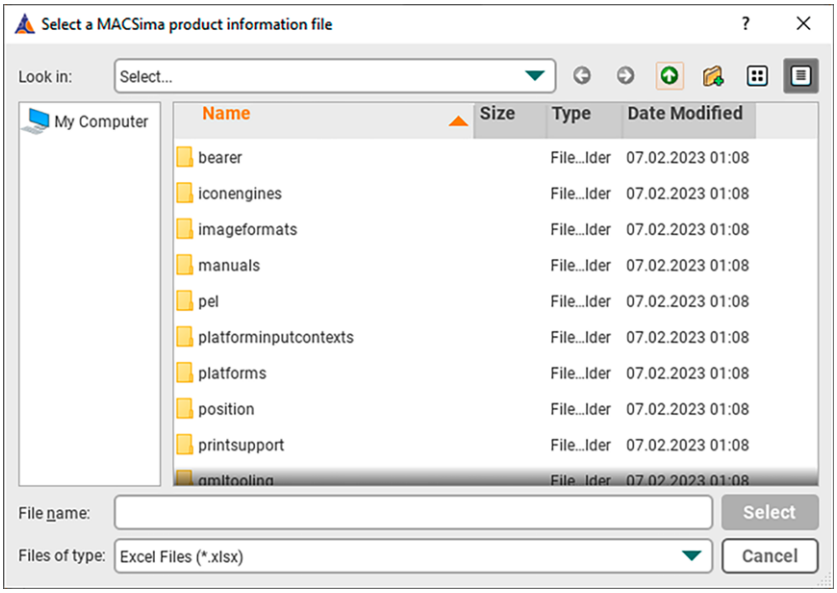
Automatic updates will be made available later.

4.5.2 Updating the Miltenyi Biotec product database

1 Click the **Updates** tab.



2 Click the **Update MB Products from Excel** button.

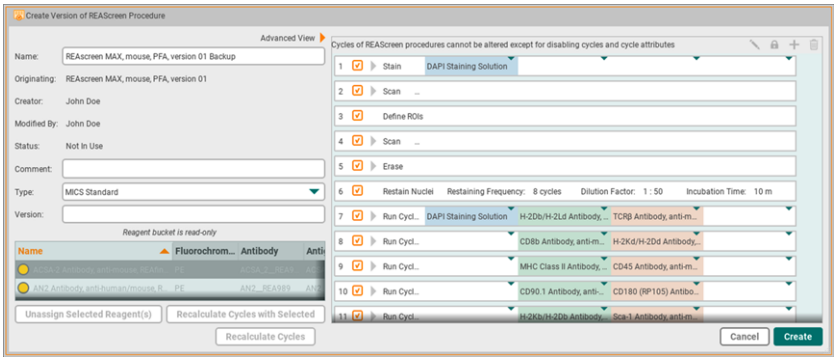


3 Select the Excel file and click the **Select** button.

Before updating the Miltenyi Biotec database, back up all your REAscreens Design Procedures by creating backup copies. Otherwise they will be overwritten.

4 In the **Procedures** window, select the REAscreen Design Procedure to back up.

5 Right-click **Create Adjusted Version...** and change the **Name**.



6 Click the **Create** button.

7 Repeat the steps **4** – **6** for all REAscreens Design Procedures you want to keep.

Updated reagent lists and REAscreen Design Procedures will be provided by Miltenyi Biotec.

5 Technical support

For technical support, contact your local Miltenyi Biotec representative or Miltenyi Biotec Technical Support at Miltenyi Biotec headquarters:

Miltenyi Biotec B.V. & Co. KG
Friedrich-Ebert-Straße 68
51429 Bergisch Gladbach
Germany
Phone: +49 2204 8306 3803
technicalsupport@miltenyi.com

Visit **www.miltenyibiotec.com** for local Miltenyi Biotec Technical Support contact information.

6 Legal notes

6.1 Limited warranty

Except as stated in a specific warranty statement which may accompany this product or as otherwise agreed in writing by an authorized representative of Miltenyi Biotec, Miltenyi Biotec's warranty to you, the original purchaser and end user ("you" or "your"), with respect to the product accompanied by this limited warranty shall be subject to the following provisions and the general terms and conditions of sale of the company within the Miltenyi Biotec group which supplied the product in effect at the date of purchase. Those terms and conditions of sale may vary by country and region. Nothing in this document should be construed as constituting an additional warranty.

Miltenyi Biotec warrants that this product will operate or perform substantially in conformance with Miltenyi Biotec's published specifications and be free from material defects in material and workmanship, when subjected to normal, proper, and intended usage by properly trained personnel, for the period of time set forth in the product documentation or package inserts accompanying the product (the "Warranty Period").

Miltenyi Biotec agrees, during the Warranty Period, to repair or replace, at Miltenyi Biotec's option, the defective product so as to cause the same to operate in substantial conformance with said published specifications; provided that you shall (a) promptly notify Miltenyi Biotec in writing upon the discovery of any nonconformity or defect, which notice shall include the product model and serial number (if applicable) and details of the warranty claim; and (b) return the nonconforming or defective product to Miltenyi Biotec, freight prepaid, only after receipt of a Return Material Authorization ("RMA") from Miltenyi Biotec, which may include biohazard decontamination procedures and other product-specific handling instructions, if applicable.

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