Mausoleum Manual

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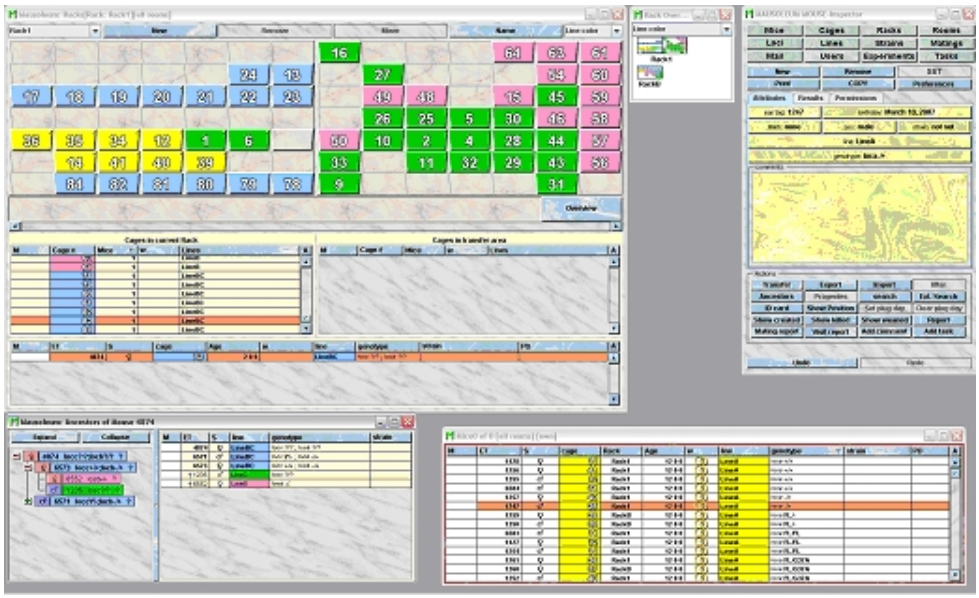
1 Introduction

Mausoleum is a mouse colony administration software in server client architecture, which provides an easy to use platform for management of a mouse research laboratory. It is particularly useful for managing transgenic mice. The basic idea behind the program Mausoleum is that the user interface is as closely as possible related to the workflow in a mouse lab. Therefore many special features have been included.
Mausoleum has a graphical representation of the racks in which various display modes give you a quick overview of many parameters of your colony such as number of mice, age, breeding status or identify cages containing the same transgenic lines. Mice can be moved through a simple drag and drop procedure. Breeding cages are detected automatically when they contain a male and one or several females of fertile age. On log in, information is given on tasks at hand, weaning to be done and other alarms that the user can determine.



Mausoleum has a group and user role concept which makes it possible to adjust privileges of each user exactly to your needs. Tasks can be scheduled and assigned to specific users and the progress can be monitored. This also allows you to create a detailed schedule of the work to be done in the mouse room.
Special informations like the genealogy, experimental results or reports for the mating or plug efficiency and others can be accessed using specialized easy to use interfaces.
Mice can be assigned to defined legal licenses. This allows you to monitor the state of your licenses like how many mice are already covered by the license, how many were killed or sacrificed and how many mice can still be used with this license. Each modification of the data is protocoled and at any time within the Mausoleum Client you can precisely determine when and by whom data was modified.
Mausoleum is 100% pure Java (v. 1.4.2. or higher) and runs on every platform which supports Java. It has been shown to work on Windows Vista, Windows XP, Mac Intel running OSX 10.4 or higher as well as Linux. Mausoleum provides its own database. Therefore no additional expensive software is needed. Regular computer hardware (hard drive and RAM) is sufficient. Mausoleum also has its own version control system which makes time consuming deployment procedures obsolete.

2 Installation

2.1 Installation of the server

You received a zip-File which contains all necessary information to run a Mausoleum server. The installation package consists of the Server.Jar and the Client.Jar and the mausoleum key. All contained in a zip file.To start the installation procedure download the zip file onto the server and unzip the mausoleum package. It will look something like this:

Mausoleum needs full Read/Write access within this directory

The server need to be set up as follows:

- It must have fixed IP-address or a fixed name by which it can be found from all the client computers
- One open port for the server generated website (usually port **80**)
- Two consecutive ports for the server client communication (usually **8765** and **8766**)
- A Java Runtime Environment (version 1.4.2.12 or higher) has to be installed

As an example let's assume we would use a computer with the IP-address **123.45.67.89** and therefore had ordered a license key with these specifications.

- IP-address: **123.45.67.89**
- Web-Port: **80**
- Communication-Ports: **8765** and **8766**

The folder “Mausoleum” with contents should now be placed on your server. In case groups have been predefined you will find directories with the names of the groups in the folder "files/server". Start the Mausoleum server by double clicking the file "serverJar.bat” (Windows) or Server.jar (Win and Mac). Note the address and Web-Port before proceeding to the client machines.

The “**HTML**” folder contains the files necessary for the Mausoleum web page and the files which will be downloaded to the Client computers.
The file “**mausoleum.key**” contains informations about the installation (server address, ports etc.). **This file has to be in the Mausoleum directory and in the HTML folder therein**.

The file “**Server.jar**” contains the java classes for the server process.

The file “**serverJar.bat**” contains a startup command for the server process which works for Windows computers. The startup command is:

```
java -Xms50m -Xmx1500m -cp Server.jar mausoleum.main.MausoleumServer
```

It works also on other operating systems but depending on the operating system it has to be stored in a file with a different name (e. g. "**serverJar.sh**").

The "**files**" folder contains the files and data produced while the program is running. In the "**files**" folder you will find the directory "**log**". It contains the log files which contain information about the process and encountered errors. The filename of these logfiles looks like:

S-2008-10-22.log

The filename indicates whether it was a client- or server-log file ("**S**" or "**C**") and the date for which the log file holds information (in the example the 22nd October 2008).

On the server computer you will find a directory "**server**". It contains the data and the backups. The data for the different groups are stored in separate directories which have the same name as the corresponding group. The data are stored in "**.data**" files. In addtion you will find "**.stxt**" files which contain statistical information and "**.def**" files for the user preferences. **Thou Shalt Not Alter Any Of These Files.**
In the "**server**" directory you will also find a directory called "**backups**". It contains backups of the group data and can be used in case of severe problems. Also if a particular error has to be tracked it is necessary to send the latest backup in order to reproduce the error. Backups are generated either on user demand at the end of a session or automatically in fixed intervals as long as there were no backups created since the last automatic backup.

2.2 Installation of the clients

The client licenses are concurrent client licenses. Therefore the number of client installations is not limited. Only the number of clients running at the same time is controlled by the number of client licenses.

The client machines have to be set up as follows;

- It must be possible for the client to communicate with the server using all three ports (in our example **80**, **8765** and **8766**). Ensure that there are no blocking firewalls etc. in between.
- A Java Runtime Environment (version 1.4.2.12 or higher) has to be installed

At the client machines you visit the Mausoleum server web page:

in our example: **http://123.45.67.89:80** (If you use the standard Web-Port 80 you can ommit the last part and simply use **http://123.45.67.89**).

You should get this web page in your browser:

Using the links "**Load program**" and "**Load key file**" you can download the program and the mausoleum key onto your local Client PC. It is recommended to create a folder called "Mausoleum" an your Client computer and to store these two files in this folder. After downloading these files you should be able to start the Client by double clicking the file "**Mausoleum.jar**".

Important note: After startup of the Client the program will retrieve several files from the server and store it in the folder mentioned above (e. g. "Mausoleum" on your desktop). There will be another jar-file calld "**Client.jar**". Please **DO NOT USE** this file in order to start the Mausoleum client! Always use the file "Mausoleum.jar". This will enable the automatic software distribution between server and client which is very important to ensure that both server and client are running the same prgram version.

2.3 Installation of new versions

Once in a while you will be notified that a new version of the program is available. If you receive this message you will download the Server.jar and Client.jar from www.maus-o-leum.de download area. You should always download both the server and the client software and copy it to your server computer.First shutdown the server using the Administartion client. Then follow the instrucitons you find in the download arera. Restart the Mausoleum server to activate the new version.

You don't need to copy anything to the client computers. Once installed Mausoleum will always retrieve the Client software from the server computer if there is a more recent version available. Please inform your colleagues that they have to **start Mausoleum via the Mausoleum.jar AND NOT via the Client.jar**. Otherwise the automated distribution of the latest version won't work.

2.4 Installation of the server as service under Windows using srvany

Installation of a service (i. e. running the program in the background without a user logged in) can be useful but is strongly dependent on the operating system. Here is a solution which works for Windows systems using the system programs **instsrv.exe** and **srvany.exe**. Both programs are part of the**Windows Server 2003 Resource Kit Tools**. Please make sure that this kit is properly installed on your server.
Now you have to create two files in your Mausoleum folder. Please note: The path of your Mausoleum directory will be different. It is assumed in the following lines that the Mausolöeum folder is "**D:\\Programm\Mausoleum**". You have to change it according to your folder structure. Also the path to the two system programs might be different. Please check for the proper path to these files
The first file contains the definitions for the Mausoleum service

FILE #1: Mausoleum.reg

```
REGEDIT4

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Mausoleum\Parameters]
"Application"="java -Xms50m -Xmx1500m -cp Server.jar
mausoleum.main.MausoleumServer"
"AppDirectory"="D:\\Programm\\Mausoleum"
"AppParameters"=""
```

The second file is the executable batch file

FILE #2 ServiceInst.bat

```
@echo off
cls
echo.
echo Installation of service "Mausoleum"
echo ---------------------------------------------------------------------
echo.
echo Installation of the service...
"C:\System\Tools\WindowsResourceKit\instsrv.exe" Mausoleum
"C:\System\Tool\WindowsResourceKit\srvany.exe"
echo.
echo Setting the registry values...
regedit /s D:\programm\Mausoleum\Mausoleum.reg
echo.
echo Starting the service...
net start Mausoleum
goto ende
:stop
echo Stop and Uninstall the service "Mausoleum"
echo ---------------------------------------------------------------------
echo Stopping the service...
net stop Mausoleum
echo.
echo Uninstalling the service and removing the registry values...
"C:\System\Tools\WindowsResourceKit\instsrv.exe" Mausoleum remove
:ende
echo.
echo *** DONE ***
echo.
```

Create these files in your Mausoleum folder. Change the paths in these files and execute the second file "ServiceInst.bat". Then the service should be installed and can be set to automatic mode as usual Windows services.

3 Administration

3.1 Starting the Administration Client

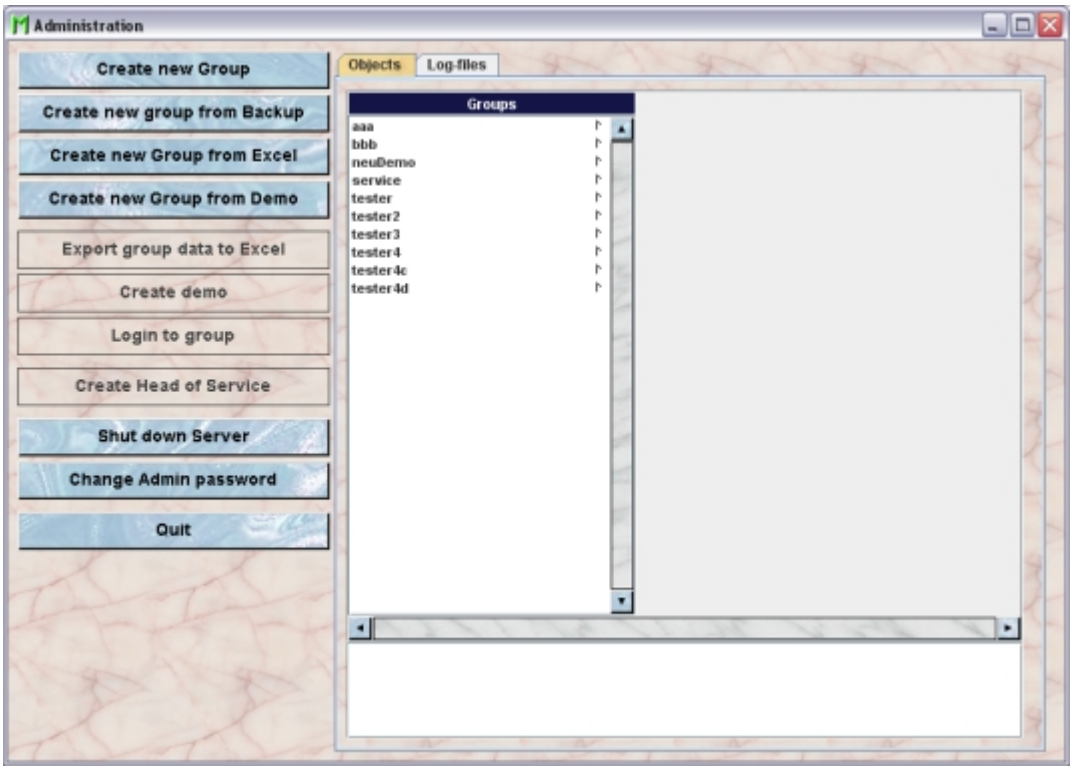
The administration of mausoleum is done via the normal Mausoleum client. Administration mode is recognized by the specialized login. After downloading the files "**Mausoleum.jar**" and "**mausoleum.key**" to a directory on the client machine you invoke the client by double clicking the "**Mausoleum.jar**" file. If the client doesn't start make sure that

- The server is up and running
- The "**mausoleum.key**" file is present in the dircetory from which you started the client
- Java is properly installed on the Client computer.

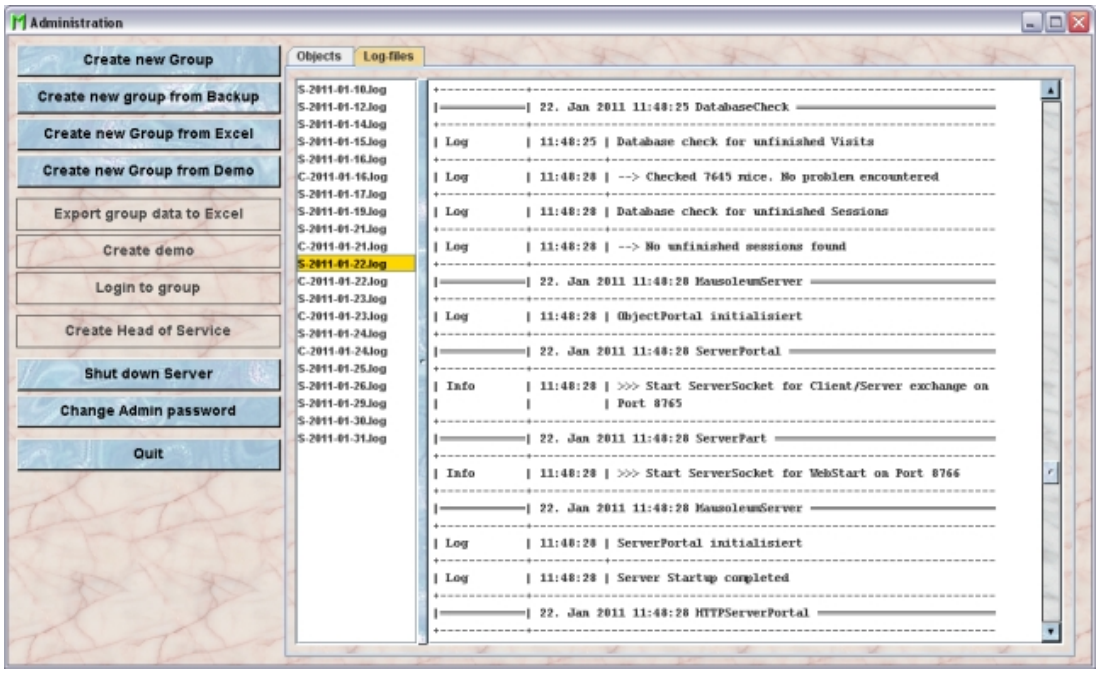
You should get this dialog:

You enter the Admistrator credentials:

Username and Group is always "**Administrator**". After successful login you get the Administrator client:



In the Object browser in the tab "**Objects**" you can look into the objects in the database. The current version does not allow direct editing of items in th database but will just show how the items are interconnected and organized. The tab "**Log files**" gives you the log files. In case you are not accessing files on the server it can be convenient to access log files from within the administrator mode.

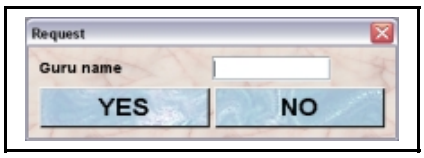


The buttons on the left hand side invoke the various operations for the administration of your Mausole installation.

3.2 Setting up a new Group

To have a manageable size to work with when you log in and to limit access mausoleum uses groups to define which mice can be seen and manipulated. One user can be part of several groups but can only access one group at a time. If agreed beforehand Mausoleum may be delivered with groups and users preinstalled.
In order to setup new groups, login as "**Administrator**". You click the Button "**New Group**". You will be asked for the group's name.

Make sure that the name for the new group is not already taken by an existing group. Then you will be asked for the name of the guru (e. g. "Smith") in this group. This name must contain at least four letters.

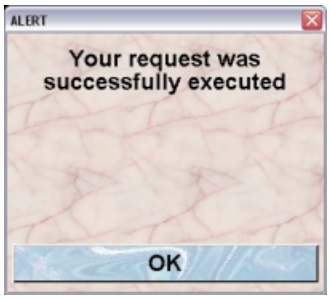


The password of the guru will be initially identical to the name. It can be changed afterwards. After a last security dialog the new group will be created.

3.3 Create a new group from a backup file

Data can be imported from a backup file. This is useful if a group moves from to a new server installation or if severe problems have occurred (e. g. file system crash). Mausoleum creates daily copies of the database on the server machine as zip files. It is wise to make backups of these and store in a separate volume.
If you want to replace the data from a group you will first shutdown the server process and then delete the directory of this group in the dirctory "**files/server**". But be aware that this step destroys all the data of this group.
Befor you start the import be sure that you copied the backup file to a directory you have acces to from the client computer. To start the import process you click the button "**Create new group from backup**". If you import a backup file, all data are taken from this datafile except the group name. So you have to specify the name of the group.

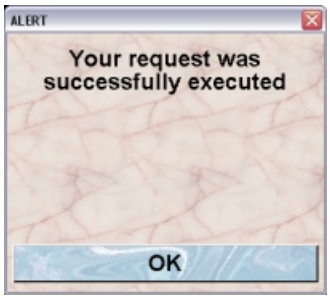
Make sure that the name for the new group is not already taken by an existing group. Then you have to select a backup file. After you have selected the backup file the data are imported. After successful import you see this dialog:



3.4 Create a new group from a excel file

You can also create a new group from an Excel file which was previously exported using the Administration Client from Mausoleum. Please be very careful if you manipulate the Excel file before importing the data. Mausoleum will not guarantee the consistence of the data if they were imported from a modified Excel file.
First you will be asked for the name of the group:

Make sure that the name for the new group is not already taken by an existing group.Then you have to specify the Excel-file which should be imported.After successful import you see this dialog:



3.5 Create a new group from a demo database

It is quite convenient to start exploring Mausoleum with the demo version. You can also work with your real data if you use the "tester2" group of the demo which is initially totally empty. Later if you bought the full version you might want to import your data from the demo version into your real database. To do this you click the button "**Create new group from demo**". In the upcoming dialog you have to specify the diretory of the group you want to import. You find this directory with the name of the group in your demo folder in "**files/server**". Usually this will be "[MAUSOLEUM]/files/server/tester2". Take care choosing the right directory. Then you will be aske dfor the name of the group:

Make sure that the name for the new group is not already taken by an existing group. After a while which is needed to setup the new group you will be informed that the new group was created:

3.6 Export data to Excel

You can export all the information of a specific group to an Excel file which you can use for other purposes whatsoiever. In order to do so you select the group of interest and click the button "**Export group data to Excel**". After a while which is needed to provide the data on the server you will be asked for the location where the Excel (".xls") file should be stored.

3.7 Creating a demo with data from a group

In case a new member joins your lab it could be a wise decision to let this person first play around with the Mausoleum before working with the real data. Of course you could use the official demo from the website. But this demo will not contain the data from your group. If you want to create a special demo version which contains all the data from a specific group you select the group for which you want to create the demo and click the button "**Create demo**". After a while you will be asked for a location for the zip-file which was created on the server. After the zip-file was sucessfully stored on your computer you porceed the same way as you do with the official demo. You unzip the package at a location (maybe even a USB-stick) where you want to train the respective person. For this special demo the same restrictions apply as fopr the official demo version. It runs only on one computer, there is no support for a client server mode and only one user can login at a time.

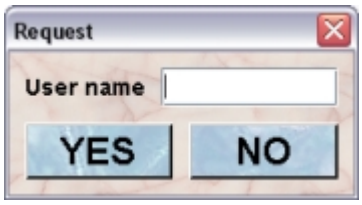
3.8 Logging into a group

If it is necessary the administrator may log in a group. Therefore perform these steps

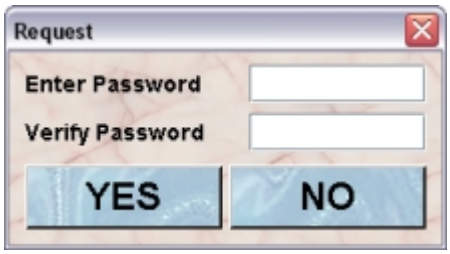
Select a group in the list
Click the button "**Login to group**"
You will be automatically logged in as the GURU of the group. In case there are several GURUs, you will be logged as the first in alphabetical order.

3.9 Creating a head of service user

Starting with Mausoleum 5.0 there is a special group (the "Service group") which is responsible for the administrtation of resources such as racks and rooms which are shared between different groups. This group will be created automatically but in the beginnig this group is completely enpty. In order to use this group the "head of service" user has to be crreated. You select the service group in the groups list and click on the button "Create Head of Service". You will be asked for the name of the user



Then you have to provide the password for this user:



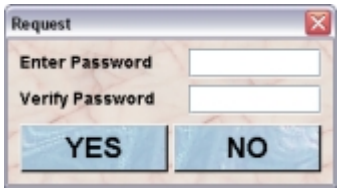
By confirming this dialog with "YES" you let Mausoleum create this user.

3.10 Shutting down the server process

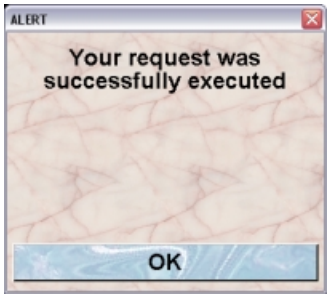
Shutting down the server is important for instance if a new server program version has to be installed. In order to shutdown the server process you click the button "**Shut down server**". The server process will be halted and has to be started again by invoking the respective start command.

3.11 Changing the administrator password

The default password for the Mausoleum administration client is "MausoAdmin". It can be changed permanently. Therefore you click the button "**Change Admin password**". You will be asked to enter and to verify the new Administration password:



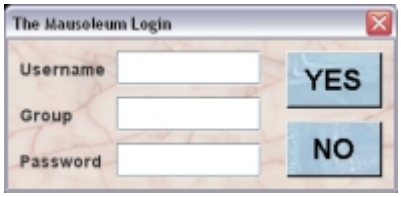
After successful change of the password you see this dialog:



4 Log in Log out

4.1 Starting the Mausoleum client

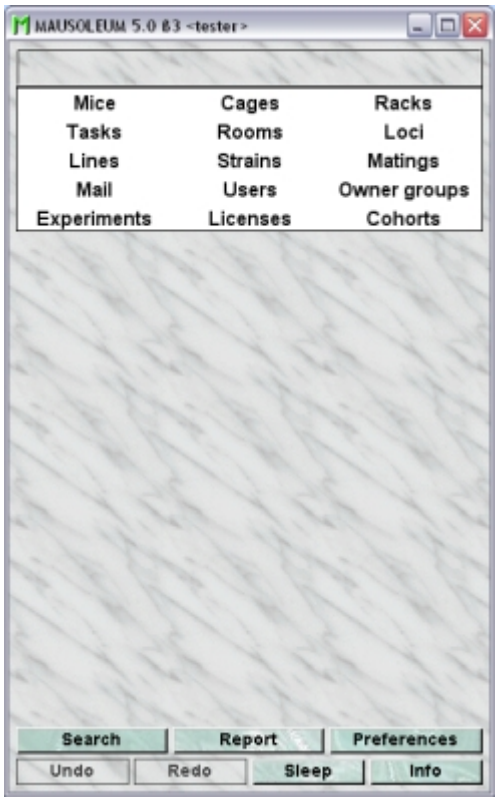
It is assumed that Mausoleum is already properly installed on your client computer as described in the chapter "Installation". Start Mausoleum by clicking the Mausoleum.jar icon. This will first check for new versions of the client software on the server and if present download it to your local Client computer. The Client will start after this deployment process. It is strongly discouraged to start Mausoleum by double clicking the Client.jar icon. Clicking the Client.jar icon will also start Mausoleum, but without checking for updates.



Log onto the database indicating user name, group and password. All items are case sensitive. You may store "**Username**" and "**Group**" in Preferences such that they are the default for a particular computer.

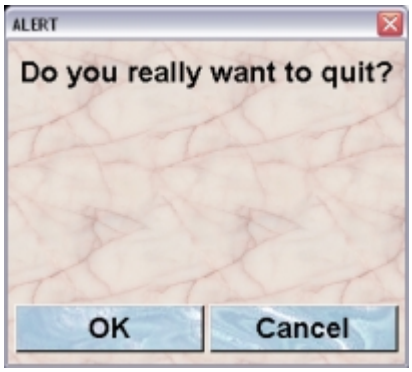
Upon successful log in Mausoleum retrieves the necessary objects from the server. You will see a progress view which visualizes this process. After initialization is complete you will see the Mausoleum inspector and perhaps also alerts on immediate concerns in the colony. The inspector is the hub of all activities in Mausoleum and its appearance will change with the particular objecta. Usually you will see a completely empty inspector:

In order to see mice, cages or other objects you have to select the desired object type in the object selection field in the top area of the inspector.

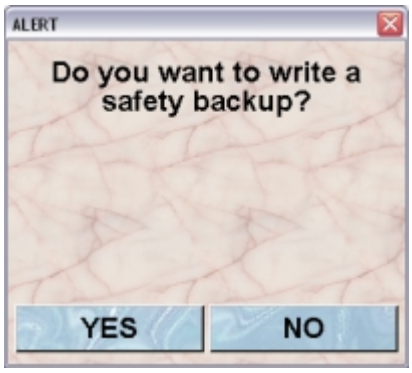


4.2 Logging out from the client

You will end the Mausoleum client by closing the Inspector window. You will be asked if you really want to quit the program.



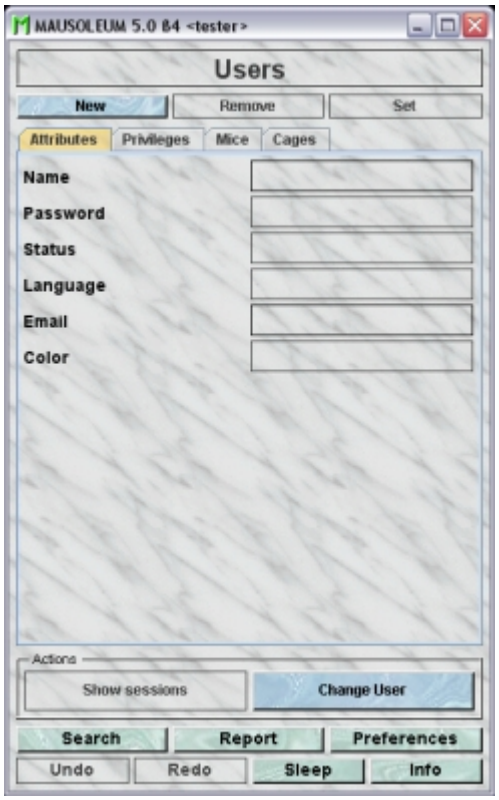
If the user has got the privileges (MASTER or GURU user) a dialog will show up asking whether or not a safety backup should be proeduced.



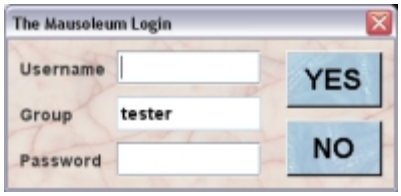
Reagrdless of any user action will Mausoleum produce a backup of the database daily as a zip file. The backups are in the Mausoleum-folder in files/server/backups. The administrator can recreate the database from such a baclup.

4.3 Changing the user

It can be convenient to switch the user (belonging to the same group) of the Mausoleum client thereby omitting the initialization procedure. You can do this by first selecting "**Users**" in the object selection area of the inspector. You will get the user inspector.



If you click on the button "**Change user**" a login dialog will appear which lets you just enter the name and the password. The group cannot be changed this way.

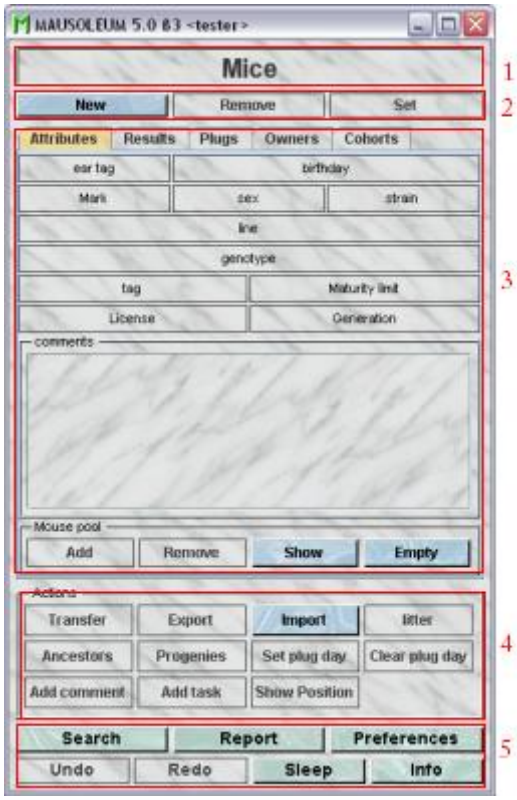


After successful login of the user all tables and displays will be reinitialized for the other user and the new session can start immediately.

5 Inspector

The inspector is the main window of Mausoleum. It changes its appearance depending on the currently active table. In the inspector you can see and edit the attributes of the currently selected objects (like mice, lines or cages). It is also the place to invoke actions specific for a given object type.

The inspector can be divided into five areas.



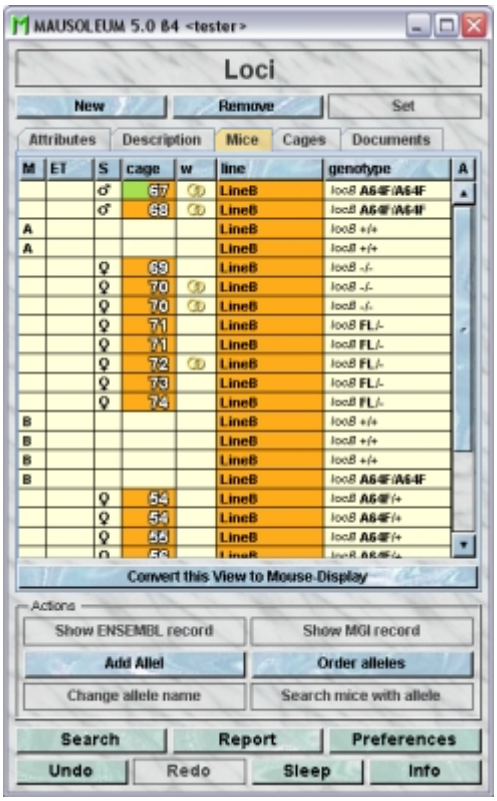
1. **The object selection field**: Here you can select the different objects by clicking once in the field. A drop-down menu appears were you can choose the desired object type e. g. mice, lines or cages.This field shows the object type for which the Inspector is currently adapted.
2. The buttons "**New**", "**Remove**" and "**Set**" allow you if you have sufficient privileges to create new objects of the current type (e. g. new mice, new lines or new cages), to remove objects or to set the modified attributes. Since the Inspector changes function depending on the selected object type the action button has the same function but the effects are on different items.
3. The third area changies dependent on the currently displayed object type. It can contain different tabs. Usually you find here an "**Attributes**"-tab where the attributes of the selected objects are displayed and can be modified. For several objects additional tabs can be found here like the "**Mice**"- the "**Cages**"- or the "**Documents**"-tab which are described below.
4. The buttons in the "Actions" area are also dependent on the current object type. Their activity status adapts to the objects selected in the corresponding table and let you perform actions not directly linked to an attribute.
5. This area contains buttons for general actions like "Undo" or "Search".

5.1 The "Attributes" tab

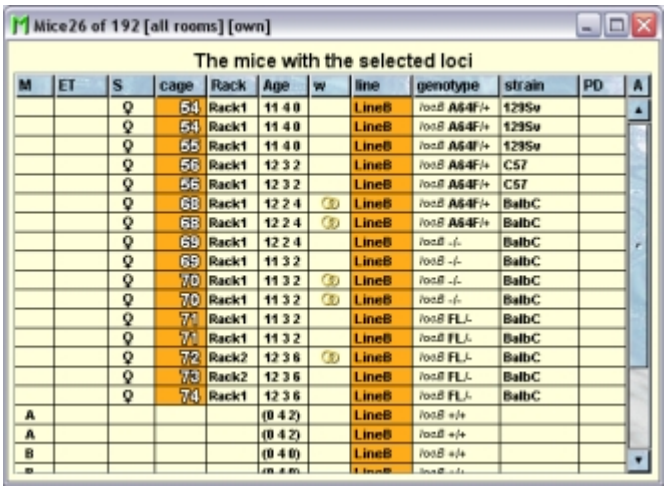
In this tab the attributes of the selected objects are shown. All the fields and buttons in which the values can be changed are shown in a yellow color. Otherwise they are shown in grey. Depending on the attribute and the selected objects it is possible to change the atribute of more objects at once.

5.2 The "Mice" tab

If this tab is present you see here a table with the mice which are associated with the selected object. In this example of the locus inspector you see here all the actual mice which have a line with one of the selected loci.



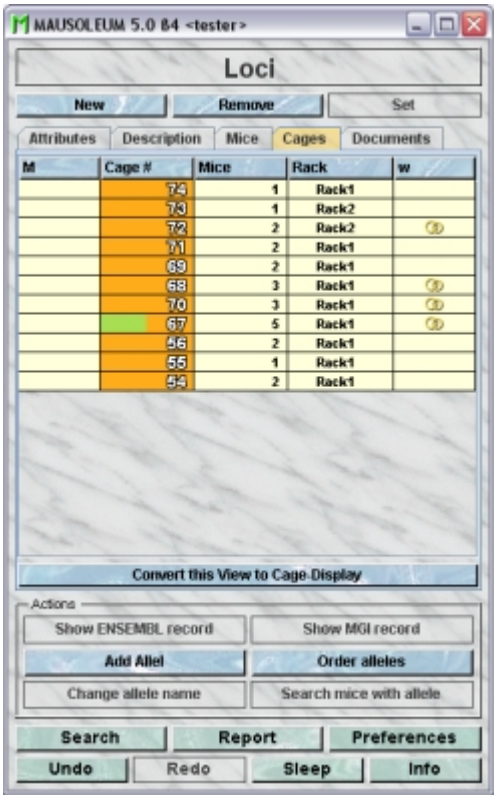
Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containg the mice will open:



M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
		♀	54	Rack1	11 4 0		LineB	loxB A64F/+	129Sv		
		♀	54	Rack1	11 4 0		LineB	loxB A64F/+	129Sv		
		♀	55	Rack1	11 4 0		LineB	loxB A64F/+	129Sv		
		♀	56	Rack1	12 3 2		LineB	loxB A64F/+	C57		
		♀	56	Rack1	12 3 2		LineB	loxB A64F/+	C57		
		♀	68	Rack1	12 2 4	⊘	LineB	loxB A64F/+	BalbC		
		♀	68	Rack1	12 2 4	⊘	LineB	loxB A64F/+	BalbC		
		♀	69	Rack1	12 2 4		LineB	loxB -/-	BalbC		
		♀	69	Rack1	11 3 2		LineB	loxB -/-	BalbC		
		♀	70	Rack1	11 3 2	⊘	LineB	loxB -/-	BalbC		
		♀	70	Rack1	11 3 2	⊘	LineB	loxB -/-	BalbC		
		♀	71	Rack1	11 3 2		LineB	loxB FL/-	BalbC		
		♀	71	Rack1	11 3 2		LineB	loxB FL/-	BalbC		
		♀	72	Rack2	12 3 6	⊘	LineB	loxB FL/-	BalbC		
		♀	73	Rack2	12 3 6		LineB	loxB FL/-	BalbC		
		♀	74	Rack1	12 3 6		LineB	loxB FL/-	BalbC		
A					(0 4 2)		LineB	loxB +/+			
A					(0 4 2)		LineB	loxB +/+			
B					(0 4 0)		LineB	loxB +/+			

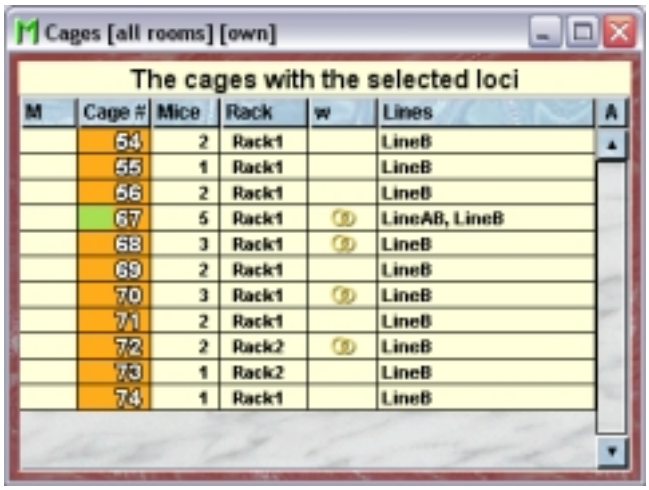
5.3 The "Cages" tab

If this tab is present you see here a table with the cages which contain mice associated with the selected object In this example of the locus inspector you see here all the actual cages which contain mice which have a line with one of the selected loci.



M	Cage #	Mice	Rack	w
	75	1	Rack1	
	74	1	Rack2	
	72	2	Rack2	⊘
	71	2	Rack1	
	69	2	Rack1	
	68	3	Rack1	⊘
	70	3	Rack1	⊘
	67	5	Rack1	⊘
	56	2	Rack1	
	55	1	Rack1	
	54	2	Rack1	

Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cage table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



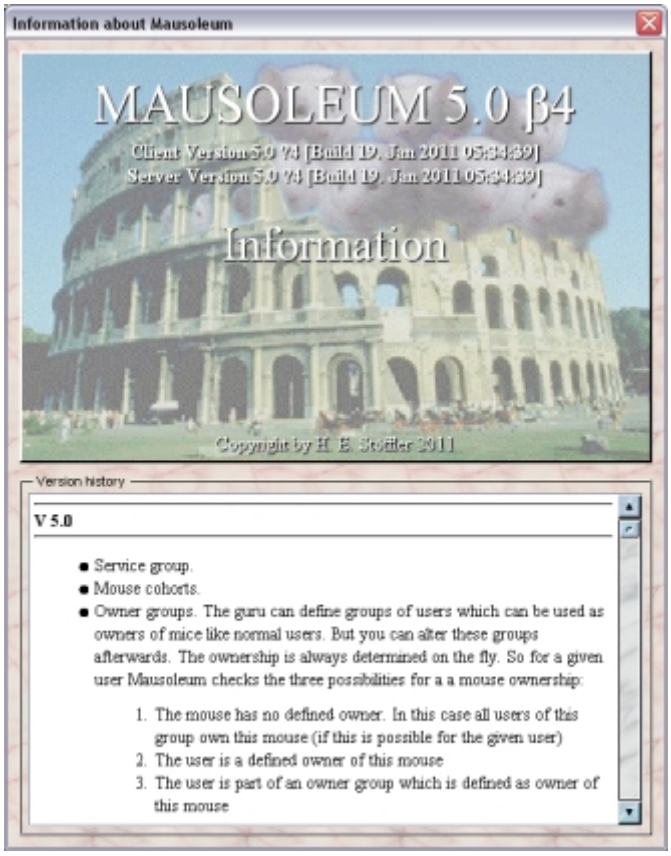
5.4 The "Documents" tab

This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the strains of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

5.5 The general actions

Search: You can search mice and cages with specialized user interfaces described in the section "**Search**"
Report: Clicking this button shows a report for the whole group where mice, cages and matings are listed accroding to several criterai such as license, rack, line and user. The content of the report is described **here**.
Preferences: Opens the dialog for customization of Mausoleum. A detailed description can be found **here**.
Undo: If active you can click this button to revert the previous action.
Redo: By clicking this button you can revert a previous "Undo"-command
Sleep: Sets this Mausoleum session in a dormant mode. Se below for a more detailed description
Info: Opens a window with version information for the server and client program and the version history listing all the changes of the last program versions



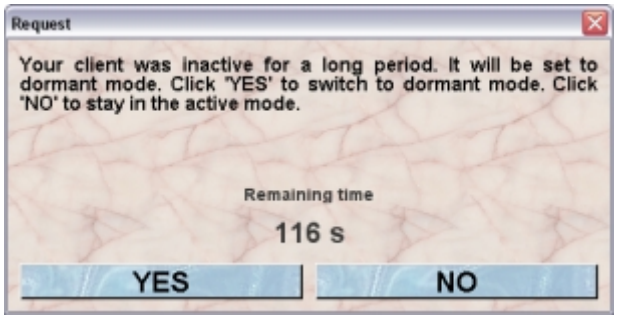
5.6 The dormant mode

From time time to time it might be the case that client licenses are in scarce. To reduce the amount of used licenses you can set Mausoleum in the dormant mode. This means that the Client is still connected to the server and is notified upon all object modifications but it is not counted as avtively used license and on the other hand can neither display nor alter objects while it is set to the dormant mode. You easily detect a domant Mausoleum client by the contents of the inspector:

You see an empty inspector in which you ave two buttons:

Return to active mode: If you click this button the Client tries to change its state to active again. If the amount of Client licenses is not sufficient you will get an alert and the Client stays in the dormant mode.
Quit Mausoleum: Ends this session and stops the Mausoleum client.

The dormant mode can be invoked in two ways. One way is that you set your Mausoleum client manually to dormant by clicking the "Sleep"-button in the the lower part of the Inspector. In addition the client registers longer idle periods while no action occurs. After 30 minutes of idle time you will get this dialog:



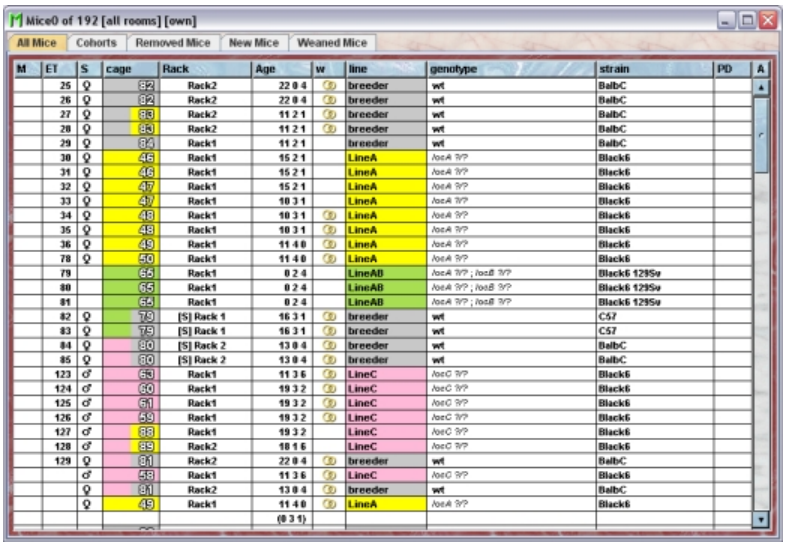
Now a countdown is started. During the remining time you have the opportunity to return to the active mode by clicking "**NO**". If you click on the "**YES**"-button or the remainig time is over, the client is set to dormant mode.

6 Tables

Tables are used in Mausoleum as a general display tool for the various objects stored in the database. The possible contents and the appearance of these tables depends strongly on the object type displayed in the respective table. There are nevertheless several common features of Mausoleum tables.

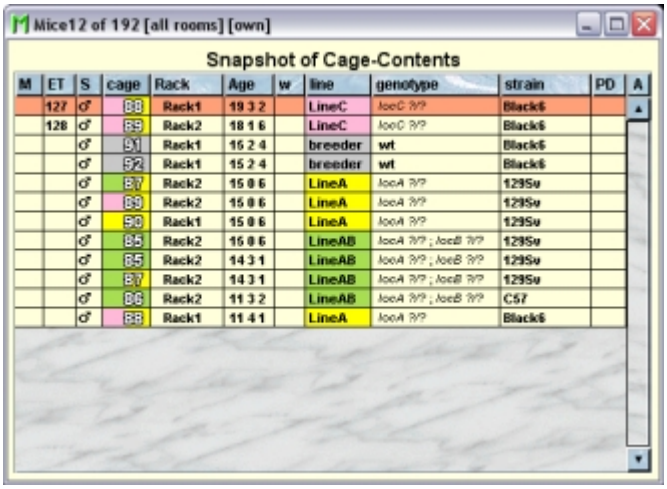
6.1 Primary and secondary tables

There is for each object type (like mouse, cage, line etc....) one primary table which contains all the active objects. It is this primary table which is shown when you select the respective object type in the Object selection field in the inspector. The main table is always shown with a white background as shown here for the primary mouse table:



M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
	25	♀	82	Rack2	22 0 4	⊗	breeder	wt	BalbC		
	26	♀	82	Rack2	22 0 4	⊗	breeder	wt	BalbC		
	27	♀	83	Rack2	11 2 1	⊗	breeder	wt	BalbC		
	28	♀	83	Rack2	11 2 1	⊗	breeder	wt	BalbC		
	29	♀	84	Rack1	11 2 1		breeder	wt	BalbC		
	30	♀	46	Rack1	15 2 1		LineA	locA ?/?	Black6		
	31	♀	46	Rack1	15 2 1		LineA	locA ?/?	Black6		
	32	♀	47	Rack1	15 2 1		LineA	locA ?/?	Black6		
	33	♀	47	Rack1	10 3 1		LineA	locA ?/?	Black6		
	34	♀	48	Rack1	10 3 1	⊗	LineA	locA ?/?	Black6		
	35	♀	48	Rack1	10 3 1	⊗	LineA	locA ?/?	Black6		
	36	♀	49	Rack1	11 4 0	⊗	LineA	locA ?/?	Black6		
	78	♀	50	Rack1	11 4 0	⊗	LineA	locA ?/?	Black6		
	79		65	Rack1	0 2 4		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	80		65	Rack1	0 2 4		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	81		65	Rack1	0 2 4		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	82	♀	79	[S] Rack 1	16 3 1	⊗	breeder	wt	C57		
	83	♀	79	[S] Rack 1	16 3 1	⊗	breeder	wt	C57		
	84	♀	80	[S] Rack 2	13 0 4	⊗	breeder	wt	BalbC		
	85	♀	80	[S] Rack 2	13 0 4	⊗	breeder	wt	BalbC		
	123	♂	53	Rack1	11 3 6	⊗	LineC	locC ?/?	Black6		
	124	♂	60	Rack1	19 3 2	⊗	LineC	locC ?/?	Black6		
	125	♂	61	Rack1	19 3 2	⊗	LineC	locC ?/?	Black6		
	126	♂	59	Rack1	19 3 2	⊗	LineC	locC ?/?	Black6		
	127	♂	88	Rack1	19 3 2		LineC	locC ?/?	Black6		
	128	♂	89	Rack2	18 1 6		LineC	locC ?/?	Black6		
	129	♀	81	Rack2	22 0 4	⊗	breeder	wt	BalbC		
		♂	58	Rack1	11 3 6	⊗	LineC	locC ?/?	Black6		
		♀	81	Rack2	13 0 4	⊗	breeder	wt	BalbC		
		♀	49	Rack1	11 4 0	⊗	LineA	locA ?/?	Black6		
					(0 3 1)						

There are also secondary tables in mausoleum e. g. the tables which show the contents of a cage. These tables contain only a subset of the objects and can also contain inactive objects or dead mice. These tables always have a yellowish background as shown here for a secondary mouse table which shows the contents of a cage:



M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
	127	♂	88	Rack1	19 3 2		LineC	locC ?/?	Black6		
	128	♂	89	Rack2	18 1 6		LineC	locC ?/?	Black6		
		♂	91	Rack1	16 2 4		breeder	wt	Black6		
		♂	92	Rack1	15 2 4		breeder	wt	Black6		
		♂	87	Rack2	15 0 6		LineA	locA ?/?	129Sv		
		♂	89	Rack2	15 0 6		LineA	locA ?/?	129Sv		
		♂	90	Rack1	15 0 6		LineA	locA ?/?	129Sv		
		♂	85	Rack2	15 0 6		LineAB	locA ?/? ; locB ?/?	129Sv		
		♂	65	Rack2	14 3 1		LineAB	locA ?/? ; locB ?/?	129Sv		
		♂	87	Rack2	14 3 1		LineAB	locA ?/? ; locB ?/?	129Sv		
		♂	86	Rack2	11 3 2		LineAB	locA ?/? ; locB ?/?	C57		
		♂	88	Rack1	11 4 1		LineA	locA ?/?	Black6		

6.2 The active table

The Mausoleum inspector adapts to the selection of objects in tables. Because there is only one inspector in can only adapt to one table. This one active table is marked with a red border around it. Please compare the following image of the same table as shown above which was now selected and became the active table:

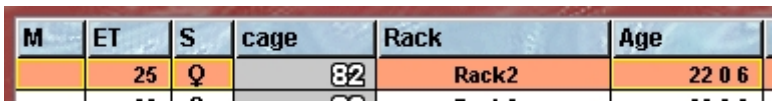
The width of columns can be adjusted by moving the border between two columns. If you double click on such a border the width of the column left to the border will be set according to the maximum length of the contents of this column as good as possible.

6.3 Sorting

You can sort the contents of the table according to the contents of a given column by double clicking the respective column header. A second double click on the same column header will resort the table according to the contents of this column but the sort direction (ascending or descending) will be inverted. The sort direction is indicated by a little arrow on the right side of the column header.

6.4 Edit in tables

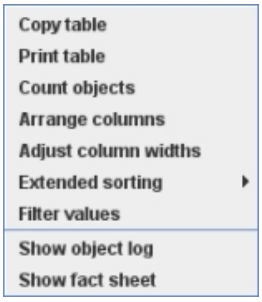
If editing in tables is selected in the Preferences you can edit certain cells in the tables directly without the need to set the values in the inspector window. The cells in which direct editing is possible are highlighted by a yellow border if the corresponding line is selected:



In this example from a mouse table you can see that it is possible to edit mark, eartag, sex and age of the mouse but not the cage or rack in which the mouse is located. Clicking in one these yellow bordered cells will open the the appropriate dialog (e. g. the dialog for the birthday if you clicked in a cell of the "Age" column).

6.5 The context menu

In every table in Mausoleum you can get a context menu by clicking the right mouse button. The available menu commands depend on the contents and the selection in the individual table. Nevertheless there are several commands which are present in the context menu of all tables.



These commands will be described below. Depending on the object type displayed, there can be additional menu items below these general commands. At the bottom part you find the equivalents of the active action buttons found in the active inspector.

6.5.1 Copy table

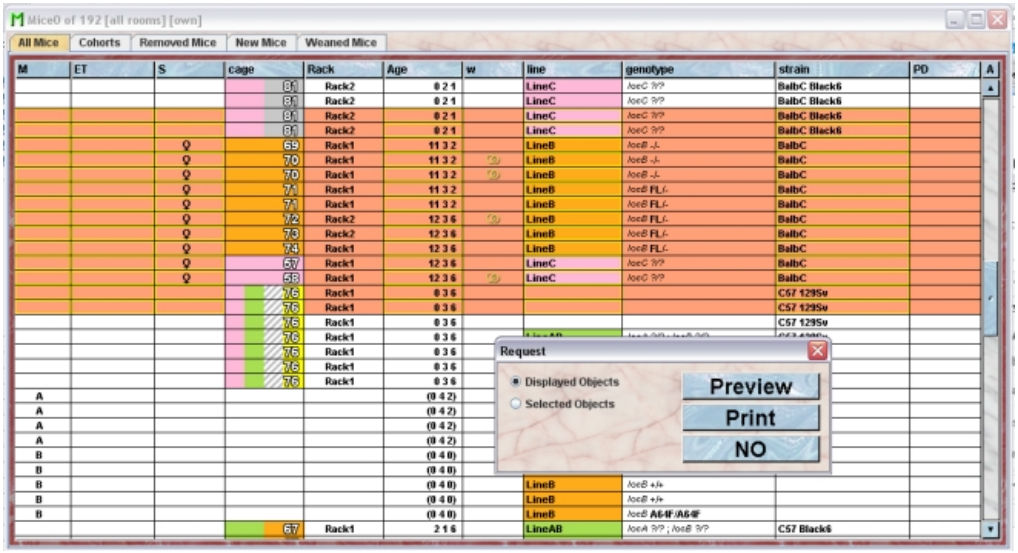
You can copy contents from the table to the clipboard and import it later in other programs for further analysis. If you select this command, a dialog opens asking for the details of the copy procedure:

You can either copy the complete displayed contents of the table or only those lines which are selected at the moment. You can also copy the format of the table cells. But it depends on the receiving program whether this can be imported. After clicking "**Copy**" the contents is transferred to the clipboard and can be pasted in other applications (e. g. MS Excel):

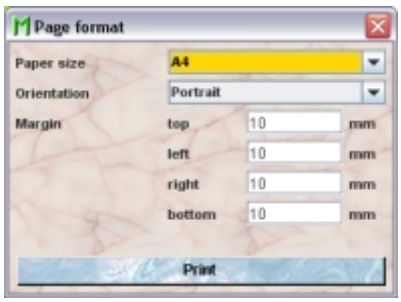
	A	B	C	D	E	F	G	H	I	J	K	L
1	M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	
2				81	Rack2	0 2 1		LineC	locC ?/?	BalbC Black6		
3				81	Rack2	0 2 1		LineC	locC ?/?	BalbC Black6		
4			f	69	Rack1	11 3 2		LineB	locB -/-	BalbC		
5			f	70	Rack1	11 3 2	x	LineB	locB -/-	BalbC		
6			f	70	Rack1	11 3 2	x	LineB	locB -/-	BalbC		
7			f	71	Rack1	11 3 2		LineB	locB FL/-	BalbC		
8			f	71	Rack1	11 3 2		LineB	locB FL/-	BalbC		
9			f	72	Rack2	12 3 6	x	LineB	locB FL/-	BalbC		
10			f	73	Rack2	12 3 6		LineB	locB FL/-	BalbC		
11			f	74	Rack1	12 3 6		LineB	locB FL/-	BalbC		
12			f	57	Rack1	12 3 6		LineC	locC ?/?	BalbC		
13			f	58	Rack1	12 3 6	x	LineC	locC ?/?	BalbC		
14				76	Rack1	0 3 6				C57 129Sv		
15				76	Rack1	0 3 6				C57 129Sv		

6.5.2 Print table

You can print the contents of the table. If you select this command a dialog opens asking for the details of the print procedure:



You can either print the complete displayed contents of the table or only those lines which are slected at the moment. Clicking "**Preview**" or "**Print**" brings up another dialog where you specify the format of the printout.



After you defined the page format proceed by clicking "**Print**" which either brings up the printer selection dialog of your system or, if you had selected "**Preview**" before, shows the print layout in a separate window:

Print Preview Page 1

Mouseform Printout 31. Jan 2011 17:12:09

M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD
		♂	58	Rack1	11 3 3	ⓑ	LineC	locC ?/?	Black6	
		♂	63	Rack1	11 3 3	ⓑ	LineC	locC ?/?	Black6	
		♂	60	Rack1	19 2 6	ⓑ	LineC	locC ?/?	Black6	
		♂	61	Rack1	19 2 6	ⓑ	LineC	locC ?/?	Black6	
		♂	59	Rack1	19 2 6	ⓑ	LineC	locC ?/?	Black6	
		♂	88	Rack1	19 2 6		LineC	locC ?/?	Black6	
		♂	89	Rack2	18 1 3		LineC	locC ?/?	Black6	
		♀	79	[S] Rack 1	16 2 5	ⓑ	breeder	wt	C57	
		♀	79	[S] Rack 1	16 2 5	ⓑ	breeder	wt	C57	
		♀	80	[S] Rack 2	13 0 1	ⓑ	breeder	wt	BalbC	
		♀	80	[S] Rack 2	13 0 1	ⓑ	breeder	wt	BalbC	
		♀	81	Rack2	13 0 1	ⓑ	breeder	wt	BalbC	
		♀	81	Rack2	22 0 1	ⓑ	breeder	wt	BalbC	
		♀	82	Rack2	22 0 1	ⓑ	breeder	wt	BalbC	
		♀	82	Rack2	22 0 1	ⓑ	breeder	wt	BalbC	
		♀	83	Rack2	11 1 5	ⓑ	breeder	wt	BalbC	
		♀	83	Rack2	11 1 5	ⓑ	breeder	wt	BalbC	
		♀	84	Rack1	11 1 5		breeder	wt	BalbC	
		♀	46	Rack1	15 1 5		LineA	locA ?/?	Black6	
		♀	46	Rack1	15 1 5		LineA	locA ?/?	Black6	
		♀	47	Rack1	15 1 5		LineA	locA ?/?	Black6	
		♀	47	Rack1	10 2 5		LineA	locA ?/?	Black6	
		♀	48	Rack1	10 2 5	ⓑ	LineA	locA ?/?	Black6	
		♀	48	Rack1	10 2 5	ⓑ	LineA	locA ?/?	Black6	
		♀	49	Rack1	11 3 4	ⓑ	LineA	locA ?/?	Black6	
		♀	49	Rack1	11 3 4	ⓑ	LineA	locA ?/?	Black6	
		♀	50	Rack1	11 3 4	ⓑ	LineA	locA ?/?	Black6	
			65	Rack1	0 2 1		LineAB	locA ?/? ; locB ?/?	Black6 129Sv	
			65	Rack1	0 2 1		LineAB	locA ?/? ; locB ?/?	Black6 129Sv	
			65	Rack1	0 2 1		LineAB	locA ?/? ; locB ?/?	Black6 129Sv	
					(0 2 5)					
			82	Rack2	0 2 1		breeder	wt	BalbC Black6	
		♀	50	Rack1	11 3 4	ⓑ	LineA	locA ?/?	Black6	
		♀	51	Rack1	16 2 5	ⓑ	LineA	locA ?/?	C57	
		♀	51	Rack1	16 2 5	ⓑ	LineA	locA ?/?	C57	
		♀	52	Rack1	16 2 5	ⓑ	LineA	locA ?/?	C57	
		♀	52	Rack1	18 0 4	ⓑ	LineA	locA ?/?	C57	
		♀	53	Rack1	18 0 4		LineA	locA ?/?	C57	
		♀	53	Rack1	18 0 4		LineA	locA ?/?	C57	
		♀	75	Rack1	18 0 4		LineA	locA ?/?	C57	
		♀	76	Rack1	11 2 6	ⓑ	LineA	locA ?/?	C57	
		♀	77	Rack1	11 2 6	ⓑ	LineA	locA ?/?	C57	
			82	Rack2	0 2 1		breeder	wt	BalbC Black6	
			82	Rack2	0 2 1		breeder	wt	BalbC Black6	
			82	Rack2	0 2 1		breeder	wt	BalbC Black6	
			82	Rack2	0 2 1		breeder	wt	BalbC Black6	
					(0 3 2)					
					(0 3 2)					
					(0 3 2)					

- Page 1 / 4 -

First | Previous | Next | Last | Print

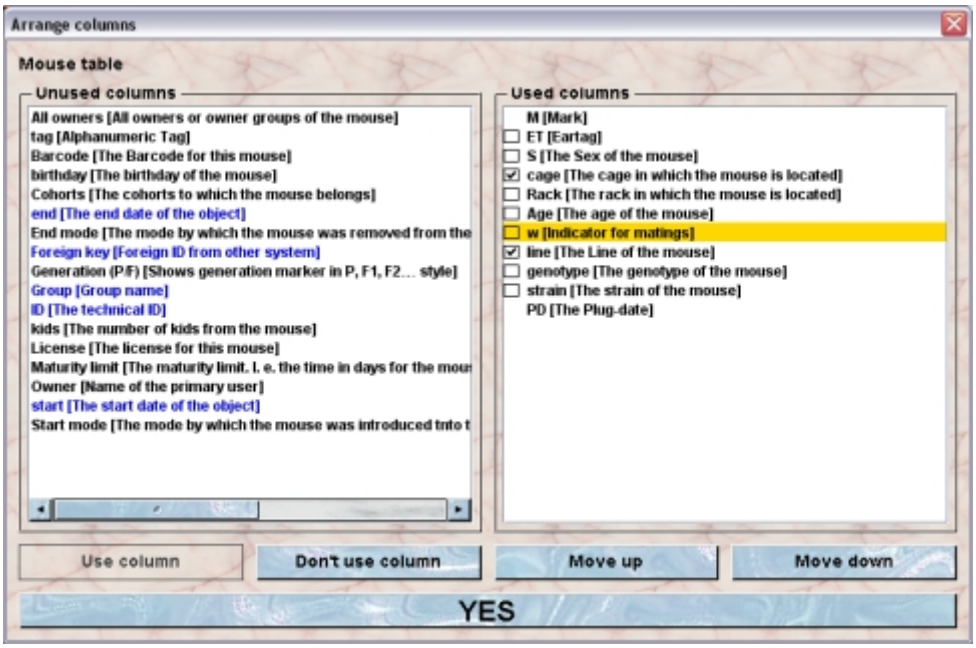
You can browse in this window through the pages or start the printout by clicking the "**Print**"-button

6.5.3 Count objects

This command gives you the number of objects currently displayed in the table.

6.5.4 Arrange columns

For each object type there are numerous values which can be displayed in a table. But usually you don't want to use all of the possible columns. You will therefore select and order the desired columns using this command. After selecting this commnmand you get a dialog which allows you to specify the columns and their order in this table. As an example this dialog is shown for a mouse table:



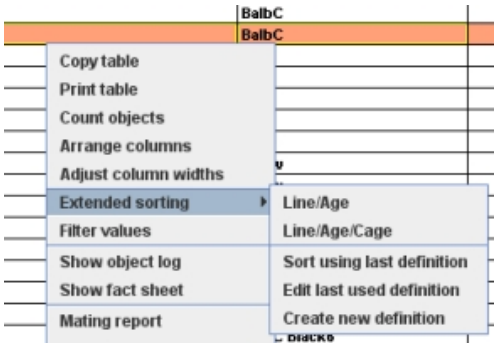
You see two lists containing the possible columns for this object type. On the left side you see the columns which are not used at the moment whereas on the right side you see the columns which are currently displayed in the table. If you want to use a column which isn't used at the moment you select this column in the left table and click on "**Use column**". On the other hand if you want to get rid of a column in your table you select it in the right list and click on "**Don't use column**".
Columns in the list of unused columns are sorted alphabetically and in the list of used columns the order reflect the order of the columns from left to reight in the table. You can change the order of the columns in the tbale by selecting a column and clicking the "**Move up**" and "**Move down**" buttons.
Columns specific for this object type are shown in black whereas columns with general informations are shown in blue.
In addition you can specify which columns should have a colored background. Those columns which have an associated color mode have a little checkbox in front of the name in th right list. You determine whether the respective column should be colored by selecting or deselcting the checkbox.

6.5.5 Adjust column widths

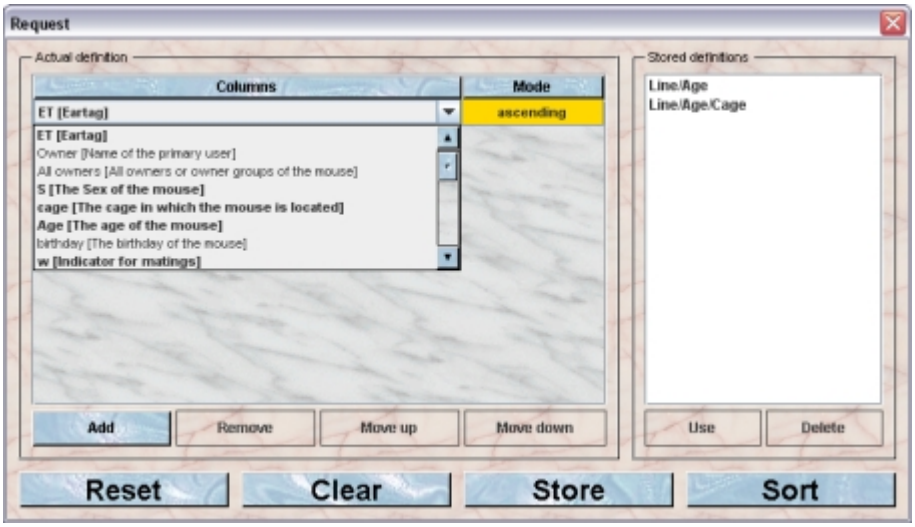
If you select this command the columns get resized so that they match the needed width as good as possible.

6.5.6 Extended sorting

In addition to the simple sorting of the table according to the content of one column you can also perform and define more complex sorting procedures. Extended sorting is of course only available if the table contains more than one item. You might have already realized that the menu item "**Extended sorting**" has a submenu.

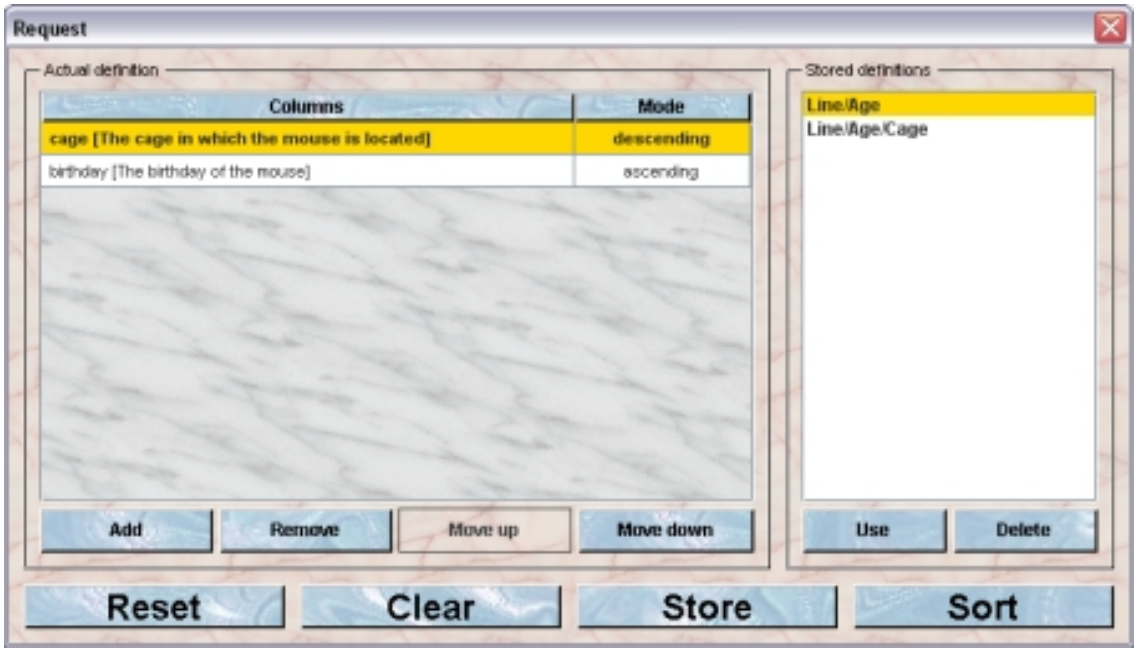


In this sumenu the user defined sorting procedures are listed on top if there are any. The item "**Sort using last definition**" let you sort the tabel according to the last edited defintion. "**Edit last used definition**" and "**Create new definition**" brings up a dialog which allows you to specify more complex sorting definitions.



In this dialog you see on left side a table showing the sorting criteria. You can select the column from all possible columns. You are not restricted to sort according to columsn which are displayed in the table. The ones which are currently displayed are shown in bold wheras thos which are not on display in the table are shown with a lighter font. You can also specify the sort direction (ascending or descending) of the individual columns. You can add additional sort criteria by clicking the "**Add**"-button. "**Remove**" will remove the selected line. You can specify the order by which the criteria are evaluated. The top most is the primary sort criteria. Only if two objects in the table are equal for the value in that column the next criteria is used and so on. You can determine tis sort order by selecting a line and using the buttons "**Move up**" and "**Move down**".

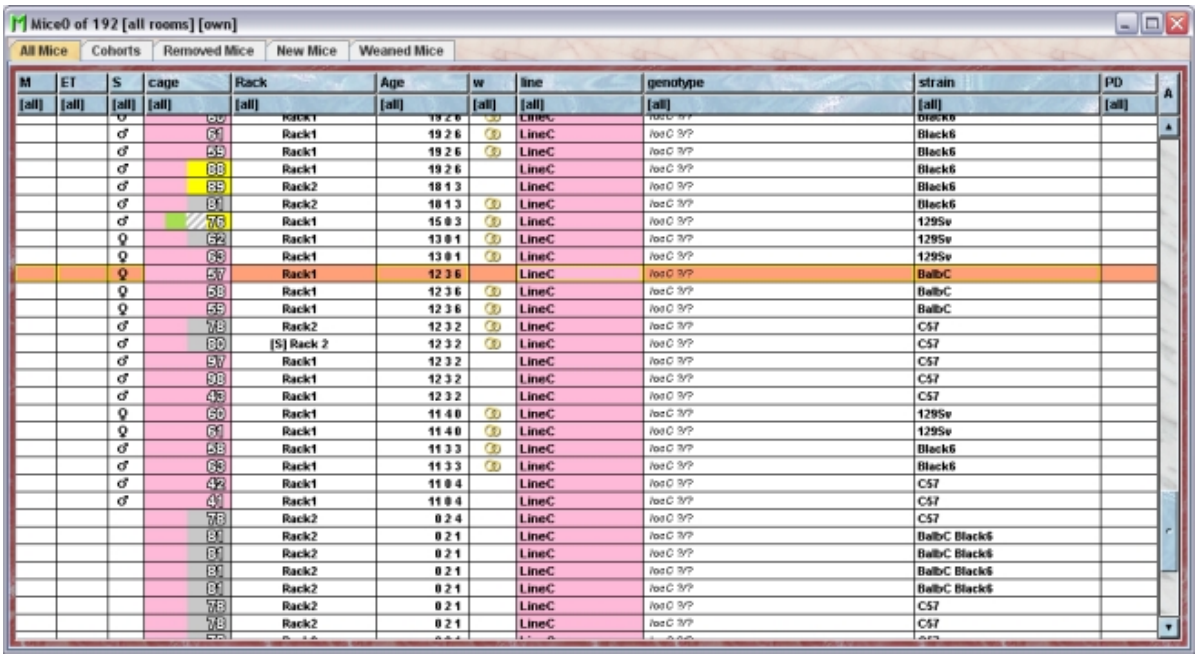
You can also store a sort definition. If you click the button "**Store**" you will be asked for a name for this definition and the definition is then stored on the server for this user. The known defintiions are shown in the list on the right side of the dialog.



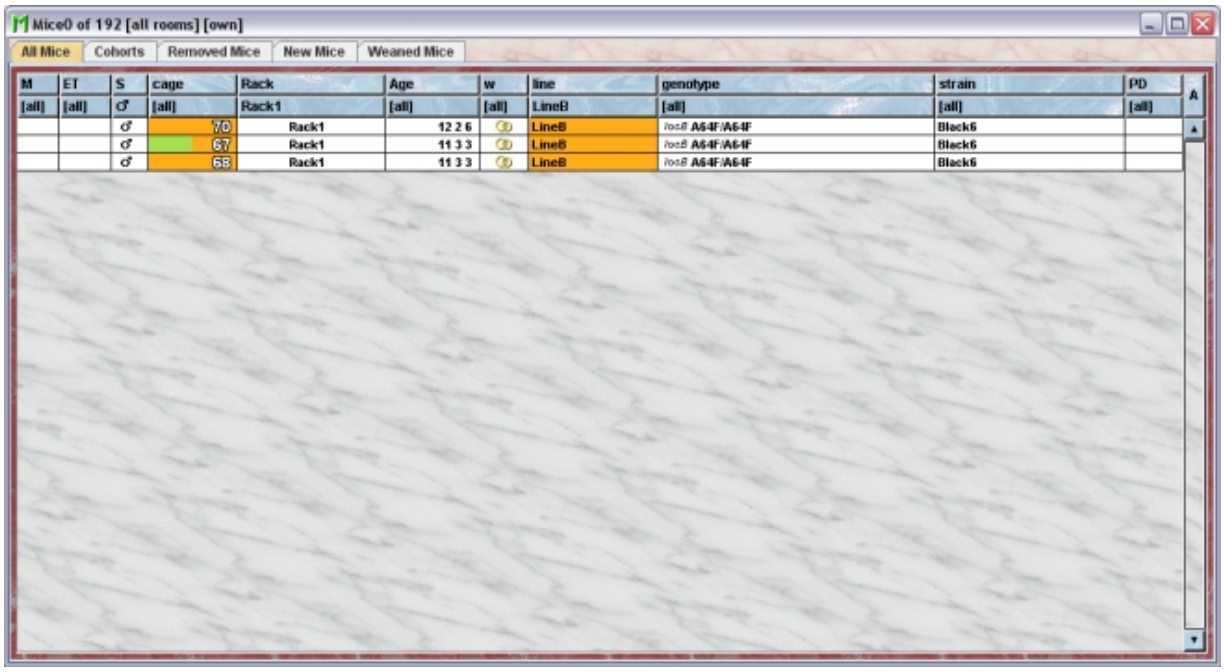
You can refine a stored definition by selecting the definition in the list and click the button "**Use**". This will copy the criteria of this stored definiton to the table on the left side and enables you to modify the criteria. In order to remove a stored defintion you select the defintion and click the button "**Delete**". The respective definition will then be removed from your list of known sort definitions.

6.5.7 Filter values

You can also filter the values in Mausoleum tables. The function works similar as you might be used from other programs (e. g. the "Auto filter" function in MS Excel). It is quite useful to narrow down the contents of the table to those objects you are interested in at the moment. To activate the filtering you select the command "**Filter values**" in the context menu. You will detect a second header line in the table.



Those columns where no filtering is used show "**[all]**" in this line indicating that all values are allowed. You can click in the filter line and will get the possible filter values. In all columns it is possible to select "**[empty]**" which leeds to a filtered table where only empty values are allowed in this column and "**[non empty]**" which allows only defined values in this column. Depending on the column it is also possible to select from the values present in that column. In the example shown below the mouse tabel is restricted to male mice of LineB in Rack1. Immediately you see that there only theree mice mathicng these criteria.



If filtering is used you can deactivate it using the command "**Don't filter**" from the context menu.

6.5.8 Show object log

This command allows you to investigate for every object when and by whom its attributes were modifeid. After selecting this command from the context menu a window opens showing the object log.

6.5.9 Show fact sheet

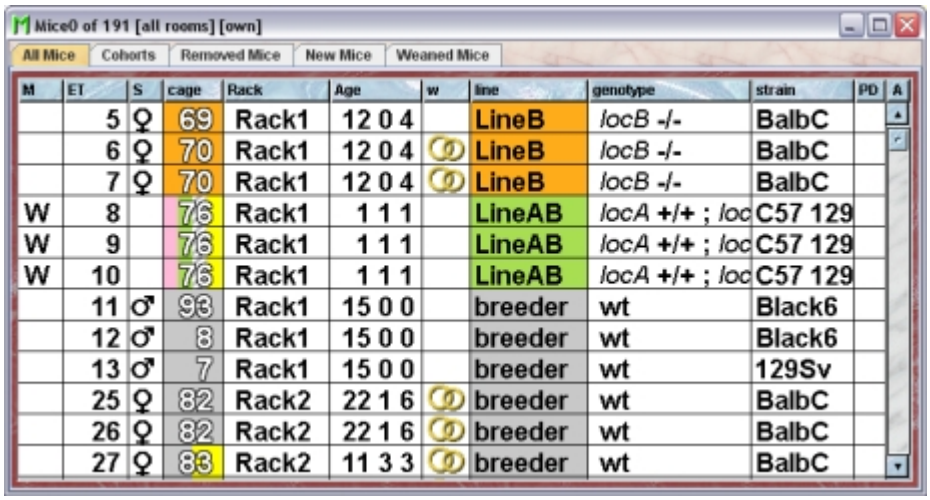
It is possible to get a detailed fact sheet for all objects in Mausoleum. Such a fact sheet contains the attributes of an object and depending on the object type much additional information e. g. a list of all cage visits of mouse and the mice which were in the respctive cage at the same time. A more detailed descripion of fact sheets can be found **here**.

6.6 Table font size

The size of the font used in the Maosuem tables can be set in the Preferences. Here you see a mouse table with a 12 pt font size:

M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
	5	♀	69	Rack1	12 0 4		LineB	locB -/-	BalbC		
	6	♀	70	Rack1	12 0 4	⊘	LineB	locB -/-	BalbC		
	7	♀	70	Rack1	12 0 4	⊘	LineB	locB -/-	BalbC		
W	8		76	Rack1	1 1 1		LineAB	locA +/+ ; locB A64F/+	C57 129Sv		
W	9		76	Rack1	1 1 1		LineAB	locA +/+ ; locB A64F/+	C57 129Sv		
W	10		76	Rack1	1 1 1		LineAB	locA +/+ ; locB A64F/+	C57 129Sv		
	11	♂	93	Rack1	15 0 0		breeder	wt	Black6		
	12	♂	8	Rack1	15 0 0		breeder	wt	Black6		
	13	♂	7	Rack1	15 0 0		breeder	wt	129Sv		
	25	♀	82	Rack2	22 1 6	⊘	breeder	wt	BalbC		
	26	♀	82	Rack2	22 1 6	⊘	breeder	wt	BalbC		
	27	♀	83	Rack2	11 3 3	⊘	breeder	wt	BalbC		
	28	♀	83	Rack2	11 3 3	⊘	breeder	wt	BalbC		
	29	♀	84	Rack1	11 3 3		breeder	wt	BalbC		
	30	♀	45	Rack1	15 3 3		LineA	locA 3/?	Black6		
	31	♀	46	Rack1	15 3 3		LineA	locA 3/?	Black6		
	32	♀	47	Rack1	15 3 3		LineA	locA 3/?	Black6		
	33	♀	47	Rack1	11 0 0		LineA	locA 3/?	Black6		
	34	♀	48	Rack1	11 0 0	⊘	LineA	locA 3/?	Black6		

After setting the font size zo 20 pt the same table looks like this:



M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
	5	♀	69	Rack1	12 0 4		LineB	locB -/-	BalbC		
	6	♀	70	Rack1	12 0 4	⊘	LineB	locB -/-	BalbC		
	7	♀	70	Rack1	12 0 4	⊘	LineB	locB -/-	BalbC		
W	8		76	Rack1	1 1 1		LineAB	locA +/+ ; loc	C57 129		
W	9		76	Rack1	1 1 1		LineAB	locA +/+ ; loc	C57 129		
W	10		76	Rack1	1 1 1		LineAB	locA +/+ ; loc	C57 129		
	11	♂	93	Rack1	15 0 0		breeder	wt	Black6		
	12	♂	8	Rack1	15 0 0		breeder	wt	Black6		
	13	♂	7	Rack1	15 0 0		breeder	wt	129Sv		
	25	♀	82	Rack2	22 1 6	⊘	breeder	wt	BalbC		
	26	♀	82	Rack2	22 1 6	⊘	breeder	wt	BalbC		
	27	♀	83	Rack2	11 3 3	⊘	breeder	wt	BalbC		

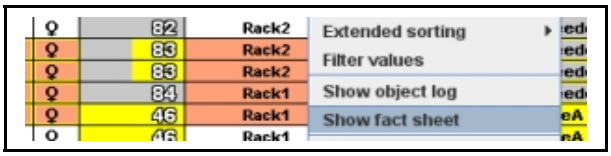
7 Fact sheets

7.1 In brief

For all the objects detailed fact sheets can be produced. The attributes of the object are shown in window which lets you browse your data in web like manner. For mice also informations like the litters, breeding performance or plugdates as well as all the cage visits with the dates and all the cage mates are shown.

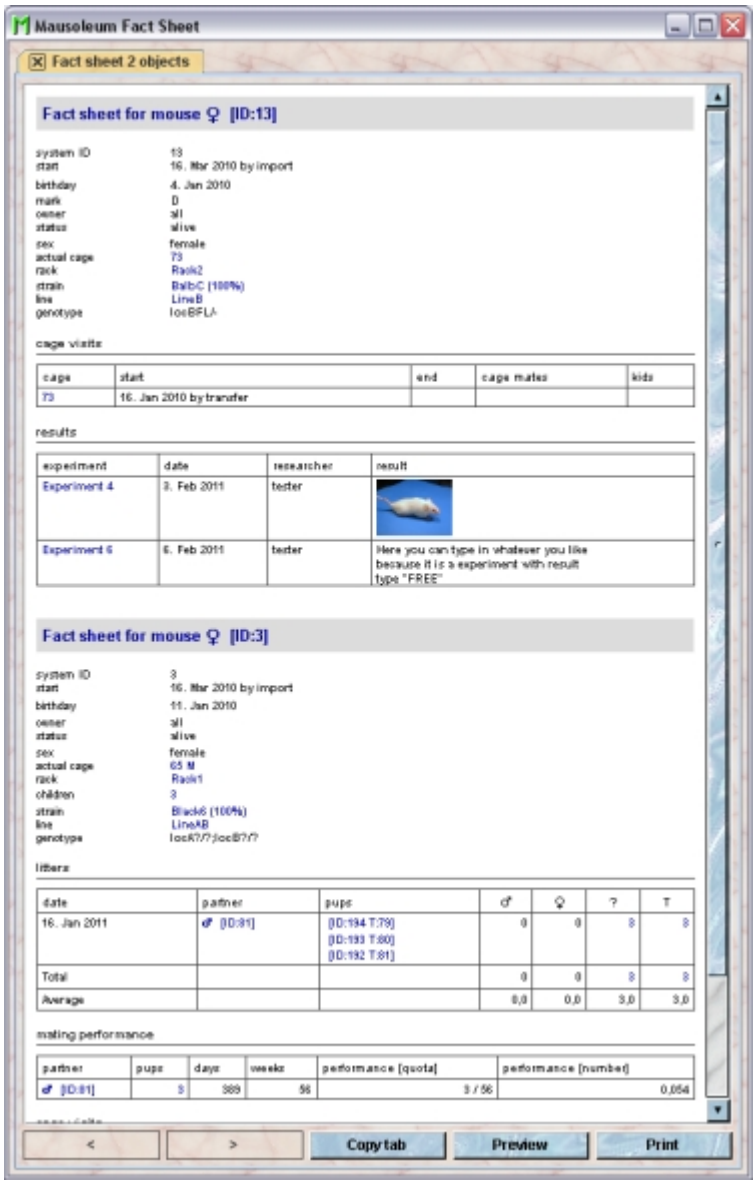
7.2 Creating fact sheets

In every **Mausoleum table** you can create fact sheets for the selected objects. You first select the objects you are interested in and invoke then the context menu by clicking the right mouse button. In the context menu you select the item "**Show fact sheet**"

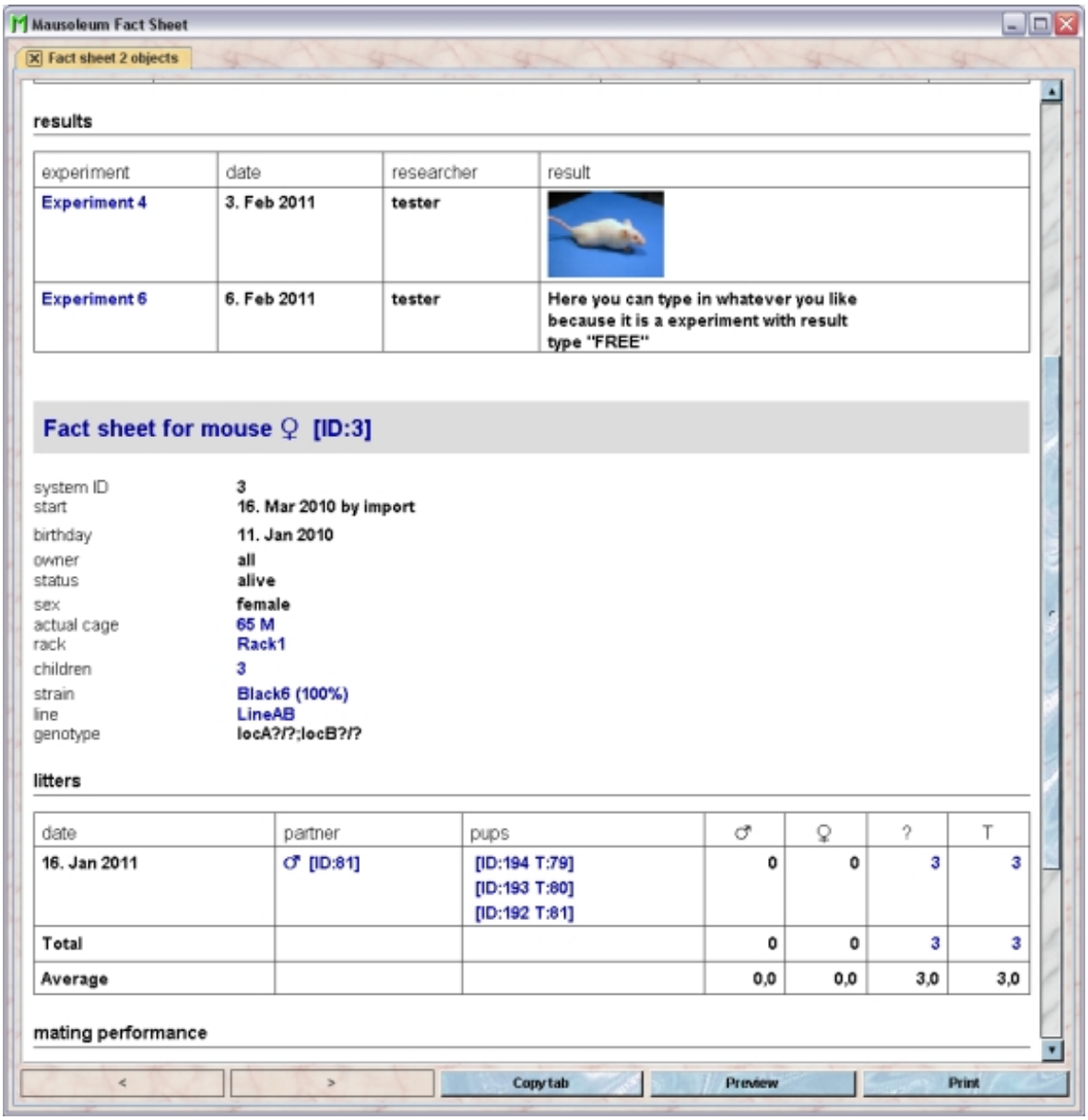


The window with the fact sheets and reports opens and a new tab with the fact sheets for the selected objects is shown. For every object you find the relevant attributes. But for some objects you can also find additional tables if they are applicable. For mice you can get:
a table with all the visits in cages with the entry and leaving dates as well as a list of the cage mates during that period

- a table with all the litters with birthdate and statistical information
- a table showing the mating performance with the various partners
- a table with all the plug dates for female mice
- a plug-report containing the plug effiency of male mice
- a table with all experimental results



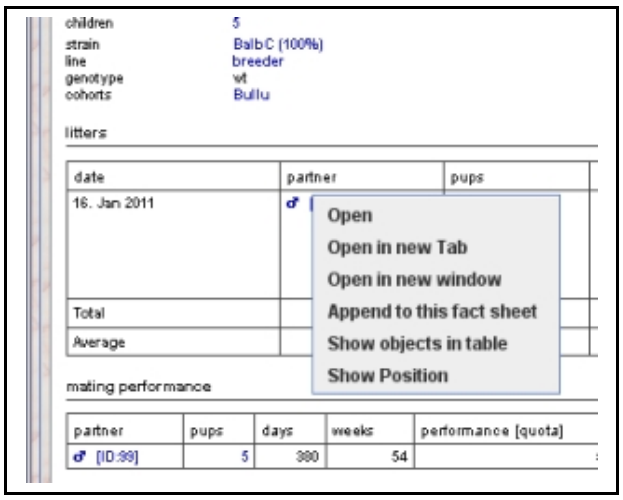
The fact sheet is scaled to fit horizontally into the window. If the font size is too small for you you can resize the window horizontally which results in a different zoom factor for the fact sheet display. Vertical resizing has no effect on the zoom factor. Below you see the same window as above but only stretched in the horizontal direction. You can see the increaesed zoom factor:



In the fact sheet you see lots of text some of it shown with a blue font color. This indicates that the factsheet for the respective items (e. g. the pups in the litter table) can be viewed in that window. The factsheets behave like a normal web browser with the items shown in blue acting as links. You can use the "**>**"- and "**<**"-button to forward or backward one page. You can also copy the contents of the actual page to a new tab using the "**Copy tab**"-button. Print out or a preview of the printout can be started by clicking "**Print**" or "**Preview**" respectively. There additional options for the links on a fact sheet. You can select them using the context menu. You get this context menu by moving the mouse pointer over a link (shown with a blue font color) and click the right mouse button. The context menu opens and allows you to choose between these actions:

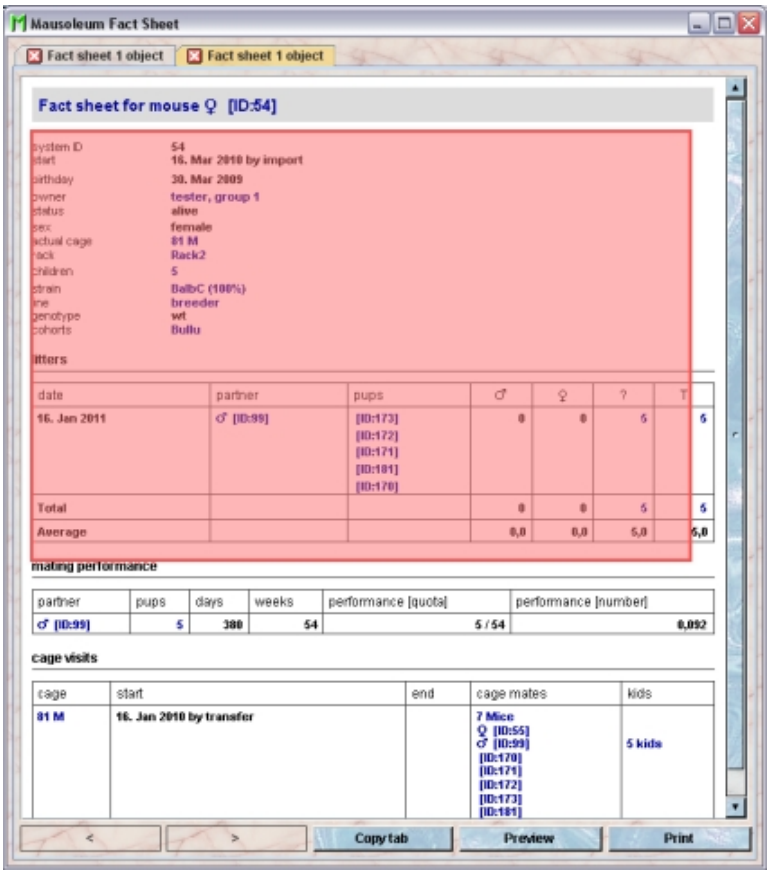
Open: Shows the fact sheets for the objects represented by the link in this tab replacing the actual contents of the tab
Open in new Tab: Shows the fact sheets for the objects represented by the link in a new tab in the same window. The actual contents of the tab remains unchanged.
Open in new window: Shows the fact sheets for the objects represented by the link in a new window. The actual contents of the tab remains unchanged.

Append to fact sheet: Appends the fact sheets for the objects represented by the link at the bottom this tab.
Show objects in table: Shows the objects represented by the link in a **Mausoleum table** allowing you to inspect or to change their attributes.
Show position: This option is available only for mice and cages. The Rack window will be shown and the position of the selected cage or the cage in which the selected mice are located is highlighted.

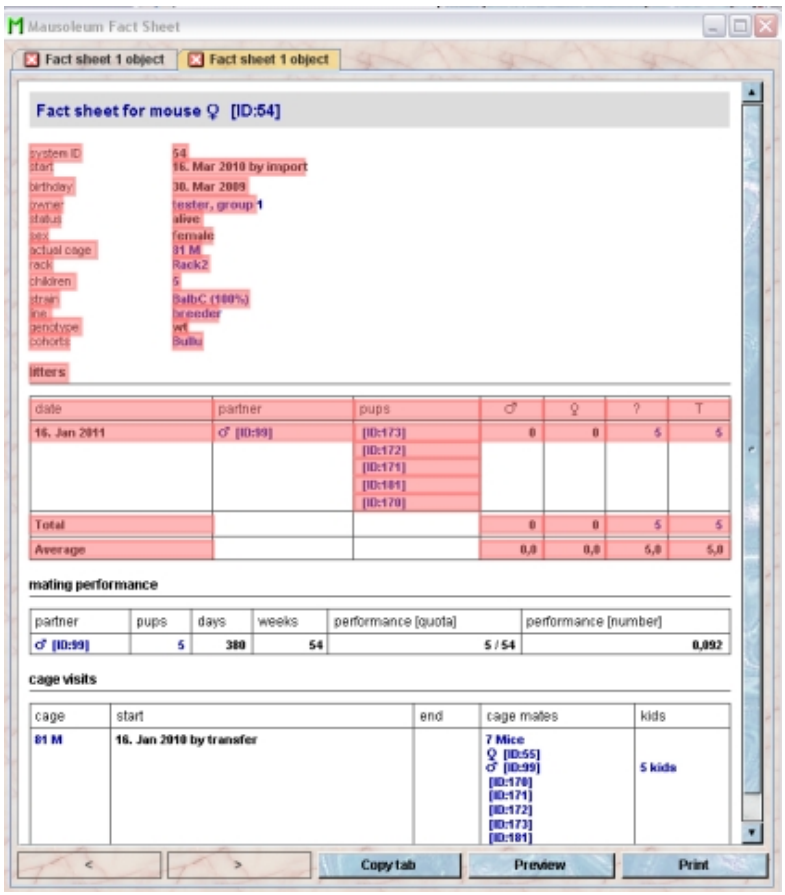


7.3 Transferring data to other programs

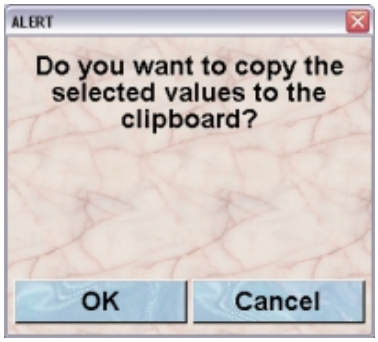
The contents of fact sheets can be transferred to other programs (e. g. Excel) for further analysis. To select data from fact sheets to the system clipboard you just drag the mouse with pressed left mouse button over the data you want to copy.



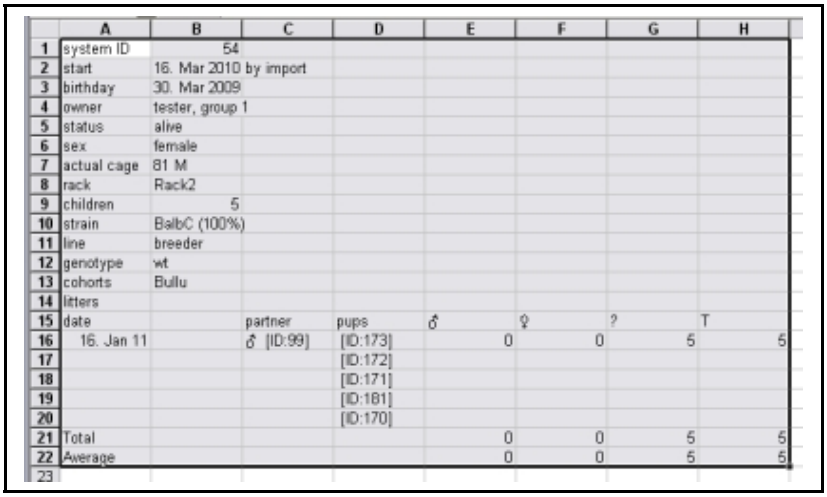
After releasing the left mouse button the data which can be transferred to the system clipboard is shown with individual frames aorund every detected data element.



A dialog will be shown asking whether or not you want to copy the selected values:



If you select "**OK**" in the dialog the data elements are transferred to the system clipboard in a way that they are available for the paste operation in other programs (e. g. Excel or Calc)



	A	B	C	D	E	F	G	H
1	system ID	54						
2	start	16. Mar 2010 by import						
3	birthday	30. Mar 2009						
4	owner	tester, group 1						
5	status	alive						
6	sex	female						
7	actual cage	81 M						
8	rack	Rack2						
9	children	5						
10	strain	BalbC (100%)						
11	line	breeder						
12	genotype	wt						
13	cohorts	Bullu						
14	litters							
15	date		partner	pups	♂	♀	?	T
16	16. Jan 11		♂ [ID:99]	[ID:173]	0	0	5	5
17				[ID:172]				
18				[ID:171]				
19				[ID:181]				
20				[ID:170]				
21	Total				0	0	5	5
22	Average				0	0	5	5
23								

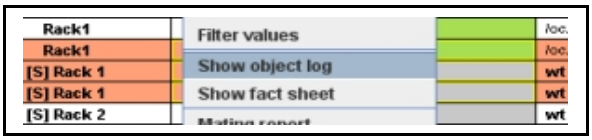
8 Object logs

8.1 In brief

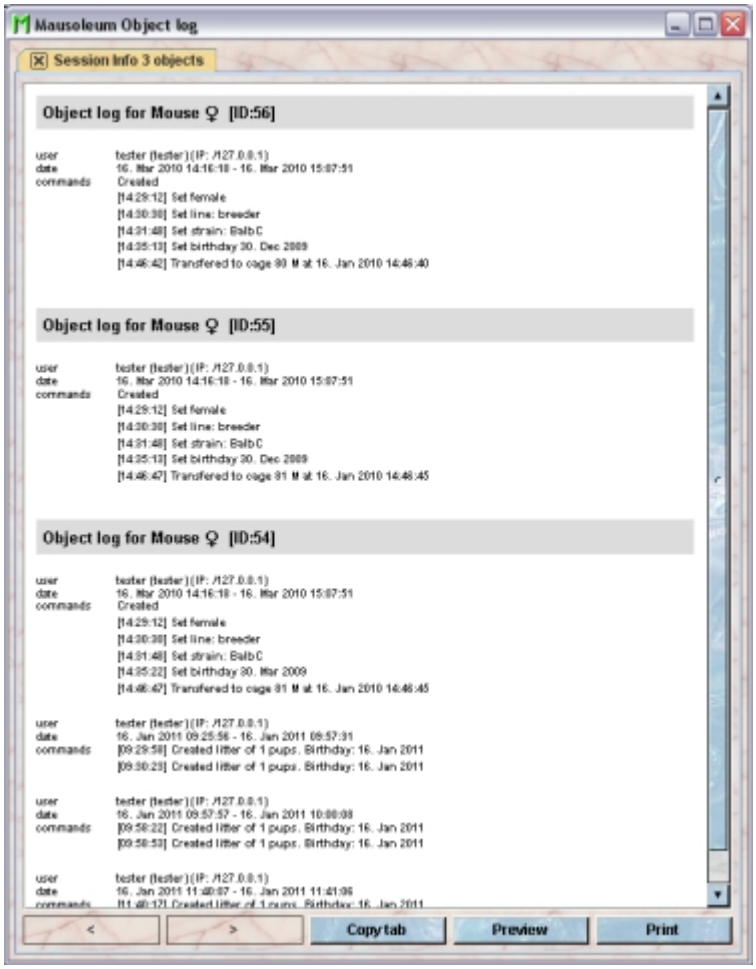
Object logs provide an easy to read representation of all the modifications of the objects in the database.You can display for all object when and by whom attributes of an object were modified. This is useful if you want to check when a specific mouse attribute e.g. the genotype was changed.

8.2 Creating an object log

If you want to see the object log for a given object, you first select your object or objects of interest in a **Mausoleum table**. Then you choose "**Show object log**" in the context menu of this table:



The window with fact sheets and object logs will open and the object log for the selected objects is shown in a new tab.



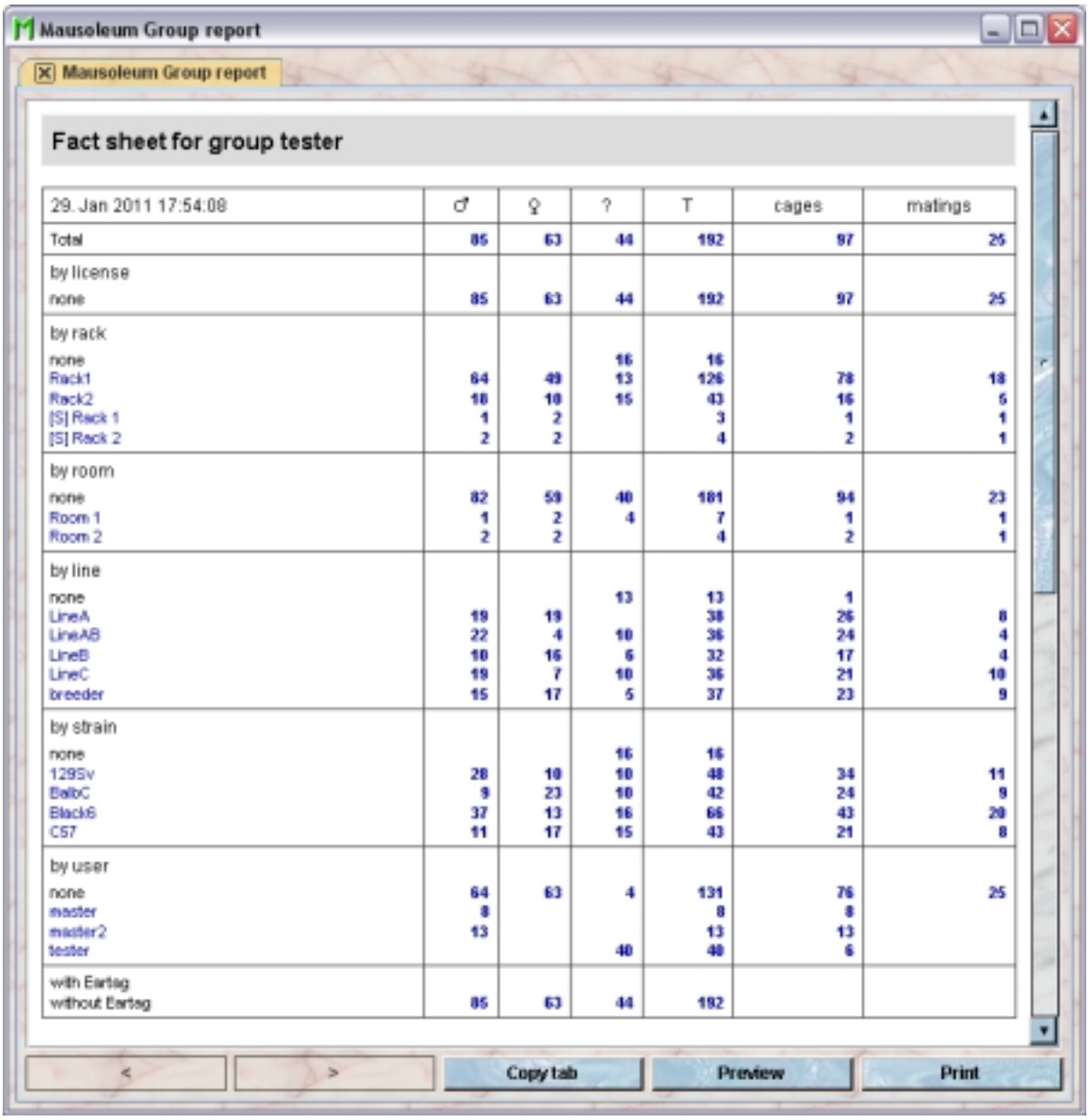
You will see for each of the objects entries for each session this object was modified in. For each session the user as well as the start and end date is shown. All commands which caused a modification of the object are shown beneath the general data for the session.

9 Report

9.1 Getting reports for the groups

Regular users (MASTERs and GURUs) can produce detailed reports for the group. These reports show the number of mice, cages and matings listed by license, rack, room, line, starin and user. To get these report you click on the "**Report**"-button in the lower part of the inspector.

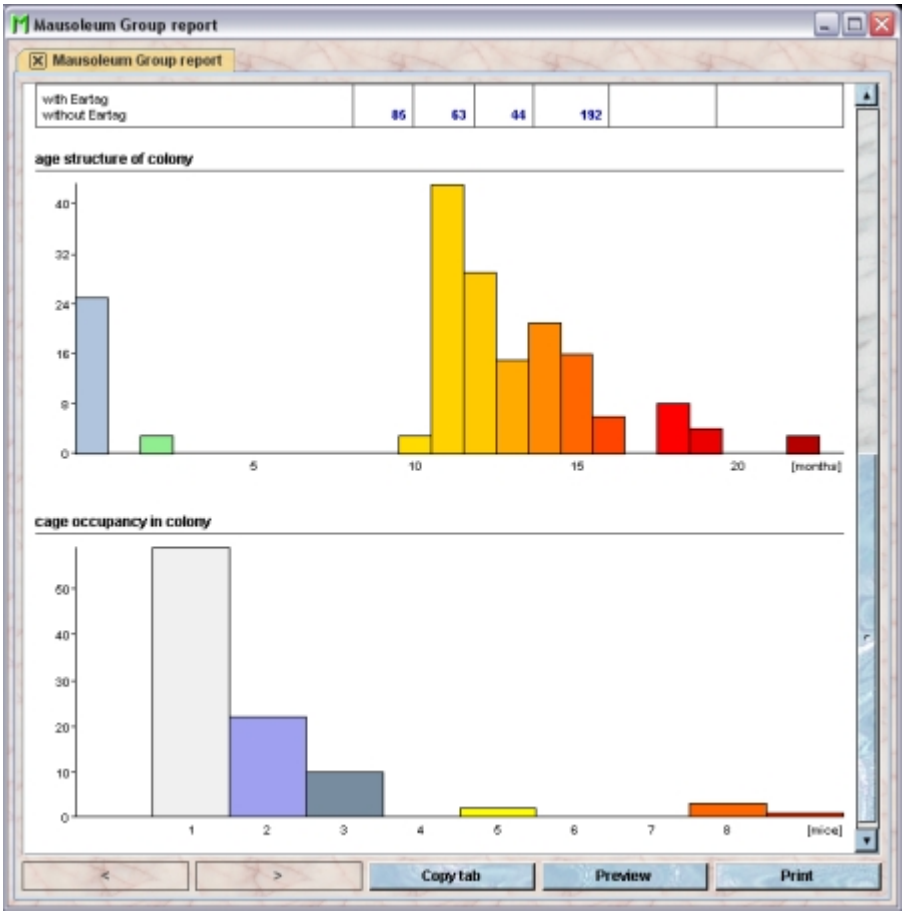
The window with the fact sheets will appear and you receive the group report.



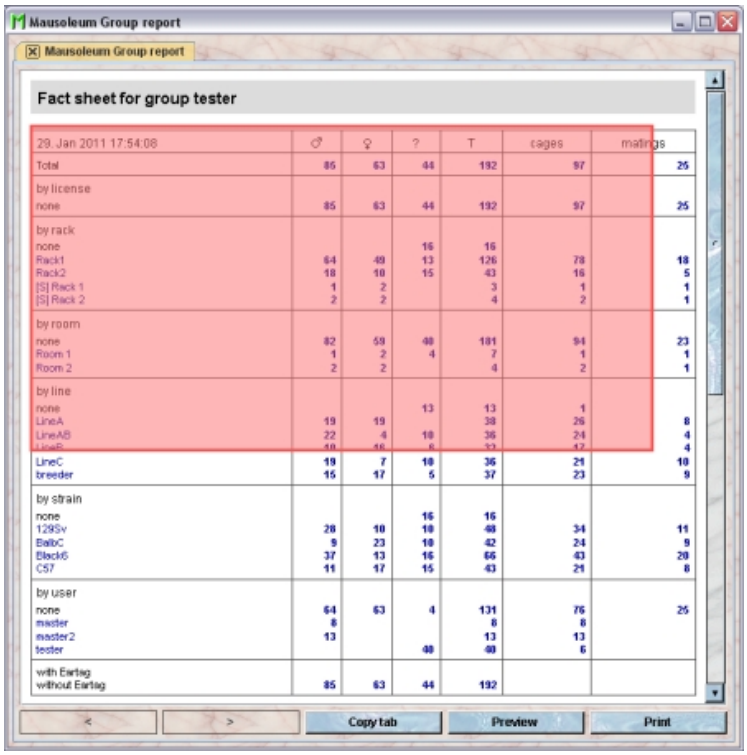
29. Jan 2011 17:54:08	♂	♀	?	T	cages	matings
Total	85	63	44	192	97	25
by license						
none	85	63	44	192	97	25
by rack						
none			16	16		
Rack1	64	49	13	126	78	18
Rack2	18	10	15	43	16	5
[S] Rack 1	1	2		3	1	1
[S] Rack 2	2	2		4	2	1
by room						
none	82	59	40	181	94	23
Room 1	1	2	4	7	1	1
Room 2	2	2		4	2	1
by line						
none			13	13	1	
LineA	19	19		38	26	8
LineAB	22	4	10	36	24	4
LineB	10	16	6	32	17	4
LineC	19	7	10	36	21	10
breeder	15	17	5	37	23	9
by strain						
none			16	16		
129Sv	28	10	10	48	34	11
BalbC	9	23	10	42	24	9
Black6	37	13	16	66	43	20
C57	11	17	15	43	21	8
by user						
none	64	63	4	131	76	25
master	8			8	8	
master2	13			13	13	
tester			40	40	6	
with Eartag						
without Eartag	85	63	44	192		

You see below the table with the statistical information diagrams which show

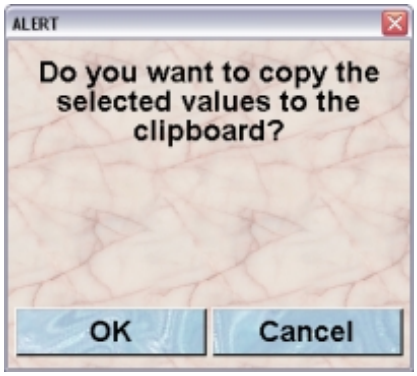
- age structure of colony: The height of the columns represent the number of mice in that colony having the same age in months.
- cage occupancy in colony: This diagram tells you how many cages are present in the colony with a given number of mice within.



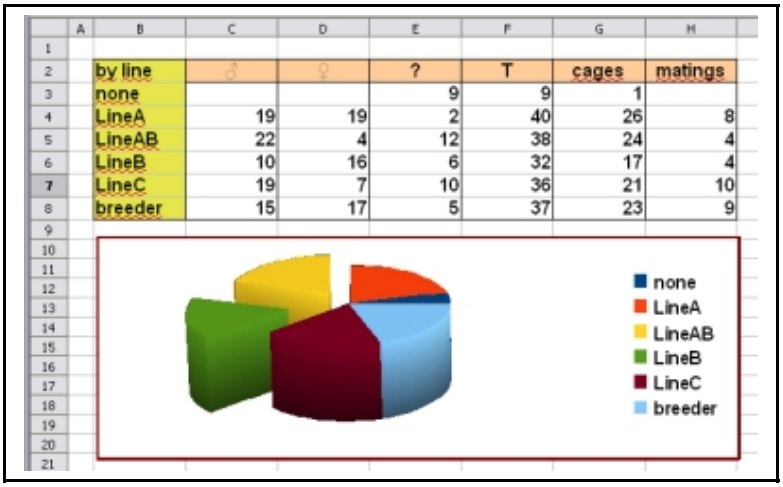
The reports can be printed and the numbers can be transferred to other programs (e. g. Excel) for further analysis. To select data from fact sheets to the system clipboard you just drag the mouse with pressed left mouse button over the data you want to copy.



After releasing the left mouse button the data which can be transferred to the system clipboard is shown with individual frames aorund every detected data element.



If you select "**OK**" in the dialog the data elements are transferred to the system clipboard in a way that they are available for the paste operation in other programs (e. g. Excel or Calc)



by line	♂	♀	?	T	cages	matings
none			9	9	1	
LineA	19	19	2	40	26	8
LineAB	22	4	12	38	24	4
LineB	10	16	6	32	17	4
LineC	19	7	10	36	21	10
breeder	15	17	5	37	23	9

10 Colors and Color modes

10.1 Colors

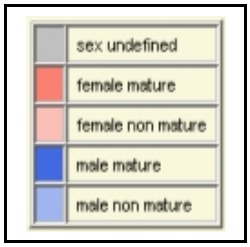
You can assign a color to several objects in Mausoleum such as lines, strains, users and licenses etc. It is very convenient to assign colours such that lines can be discerned or grouped. With the exception of strains you can use color patterns. When you click on the color field in the respective inspector you can define the color in the color choose dialog:

You can adjust the colors using the three sliders for red, green and blue. The resulting color is shown in the big field on the left hand side. In between the two colro definition areas you can specify the desired pattern. Below these field there is a little field demonstrating what that the selected color or color pattern might look like in tables and cages in the rack window.
Colors are used to depict the cages in the rack window or the rack overview using one of the color modes described below. They can also be used in the tables. You can define for ceratin columns in the tabels that the background should be painted using the respective color and color mode.

10.2 Color modes

Mausoleum uses colors as an very efficient tool to visualize content attributes of the cages. This is very useful if you are looking for cages with a specific content in the rack window or the rack overview. There are many different color modes available from which the user can choose. You can restrict the number of color modes to those you want to use in the **Preferences** dialog. These color modes are available:

Sex The sex and the sexual maturity of the mice is indicated by differently shaded red and blue colors:

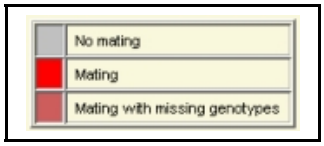


Line color will paint the cages according to the lines of mice that are represented in the cage. More than one color indicates more than one line present. Grey stripes indicate a wt mouse not assigned to a line.

Strain color will paint the cages according to the strains of mice that are represented in the cage. More than one color indicates more than one strain present. If a mouse has amixture of strains the mixed (according to the percentage of the individual strain) color is used. iGrey stripes indicate a wt mouse not assigned to a line.

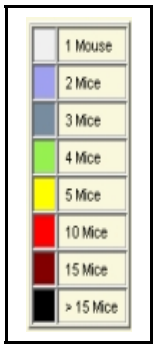
Line/strain color will paint the cages according to the line color. An exception are breeder mice. In this case the strain color is shown with a grey border.

Mating will paint breeding cages red. Note that a mother with litter will not be regarded as a breeding cage unless a fertile male is present. Matings in which the genotype of the parents is not fully defined are shown in a darker red color.



User color defines which cages belong to which user. Cages shared with everyone are transparent.

Mouse count is a visual display on how many mice reside in each cage displayed. Single mice are light blue (indicating they would benefit from company. Dark blue indicates a pair and Green, green going on yellow or yellow colour indicates three, four or five mice. Different shades of orange six to ten mice. ten to fifteen mice in a cage are shown in dark red. miore than fifteen mice are shown in black



Weaning is set up in a similar way such that breeding cages with offspring younger than a week are green, cages with two weeks old are painted in different shades of orange and offspring over the age of are denoted by red colour. Cages without offspring are grey. In contrast to the mating mode, age of litters are shown also in the absence of a male in the cage.

	No weaning
	Weaning at once
	Weaning within 1 day
	Weaning within 3 days
	Weaning within 5 days
	Weaning within 7 days
	Weaning at later timepoint

Age of mice shows the age of all mice in a cage. This feature can be useful for selecting age match animals for experiments. The following color coding is used for mouse age:

	undefined		6 months
	= 2 weeks		1 year
	1 month		18 months
	2 months		2 years
	3 months		> 2 years

Average age uses the same color coding as "Age of mice" but an average age for all the mice in the cage is calculated.

Maximum age shows the age of the oldest mouse in the cage with the same colour scale going from green to yellow to orange and red. This feature can be useful for the decision on replacing breeder animals.

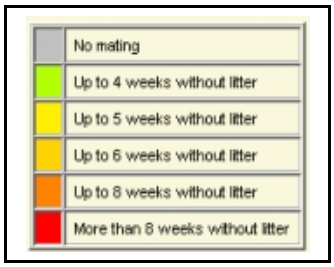
Missing tags can be used for identifying cages where the animals have no individual markings. It is indicated whether the untagged mice are of transgenic line (red) or breeder mice (yellow).

	No untagged mice
	Untagged mice present
	Untagged breeder mice present

Missing genotypes shows cages in red where mice are present with missing genotype informations.

	no missing genoptype
	genotypes missing

Breeding performance can be used to visualize productive or non productive matings. A mating cage is green it has been less than four weeks since the last litter, orange (or yellow) if between 5 and 8 weeks since a litter and red if more than 8 weeks since a litter.



All Tasks indicates whether in this cage are mice with assigned tasks. White indicates a task in the future, green the task date is in 5 days, yellow in 2 days, red today and black shows that there are mice with tasks past due. In this mode also finished tasks are indicated by a light orange color.

Active tasks uses the same color scheme but finished tasks aren't indicated.

Licenses will paint the cages according to the licenses of the mice that are represented in the cage.

Cage mark indicates if the cage has an assigned mark which can be ths standard pointer mark or a single letter from A to Z. Colors are given according to zhis coding scheme:

	No mark		F		M		T
	Standard		G		N		U
	A		H		O		V
	B		I		P		W
	C		J		Q		X
	D		K		R		Y
	E		L		S		Z

Mouse marks indicates if in the cage are mice with an assigned mark which can be ths standard pointer mark or a single letter from A to Z. Colors are given according to zhis coding scheme:

	No mark		F		M		T
	Standard		G		N		U
	A		H		O		V
	B		I		P		W
	C		J		Q		X
	D		K		R		Y
	E		L		S		Z

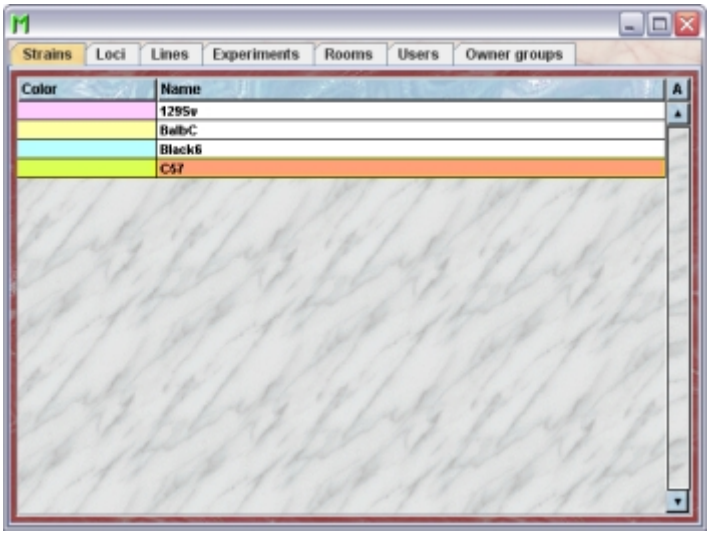
11 Strains

11.1 In brief

Strains represent in Mausoleum the genetic background of mice. They correspond to mouse strains like C57/BL6 or BalbC. In order to ensure precise strain information for all mice the strains to be used for the mice have to be predefined by the GURU of the group.
Strains can be removed by the GURU of a group. They will not be deleted from the database but cannot be selected anymore for mice. This removal of strains can be reverted later by the GURU of the group.

11.2 The strain table

By clicking "**Strains**" in the object selection field of the Inspector you will get a window with the table of all actually defined strains of the group.



Using the command "Arrange columns" from the context menu (right mouse click in the table) you can specify which attributes of the strains should be shown in this table. These attributes are available for the strain table:

Column header	Description	Sortable	Filterable	Colorable
Color	The color used for this strain	**11.2.1.1X**		
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Maturity limit	The maturity limit. I. e. the time in days for the mouse to become sexually active. Default value is 42 (6 weeks)	X	X	

Name	The name of the strain	X		
end	The end date of the object	X		
start	The start date of the object	X		

In the strain table a GURU can specify whether only the active strains should be displayed in the table or also the inactivated strains. To switch between these display modes you use the little "**A**" button in top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

11.3 The strain inspector

The strain inspector is active as soon as the strain table becomes the active table. It will adopt to the attributes of the selected strain and lets the user modify the attributes if the user has sufficient privileges to do so. The strain inspector has four tabs

11.3.1 The "Attributes" tab

It shows the attributes of the strain:

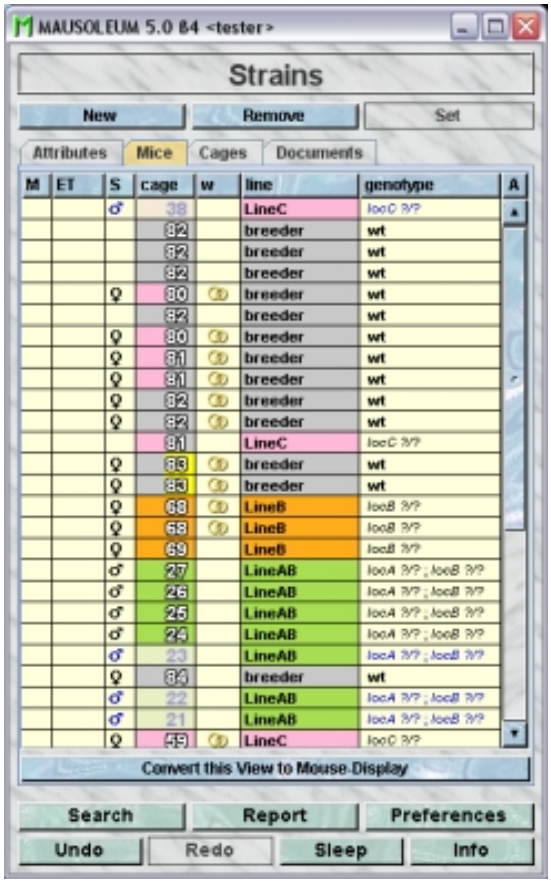
- **Name**: Shows the name of the strain.
- **Color**: You can assign a color to a strain. It is very convenient to assign colours such that strains can be discerned or grouped. In contrast to other object colors you cannot

use color patterns for strains. This is due to the fact that mice can have a strain mixture. In this case the strain color of the respective mouse is shown as the color mixture of the pure strains. A description of the Color choose dialog can be fond **here**.

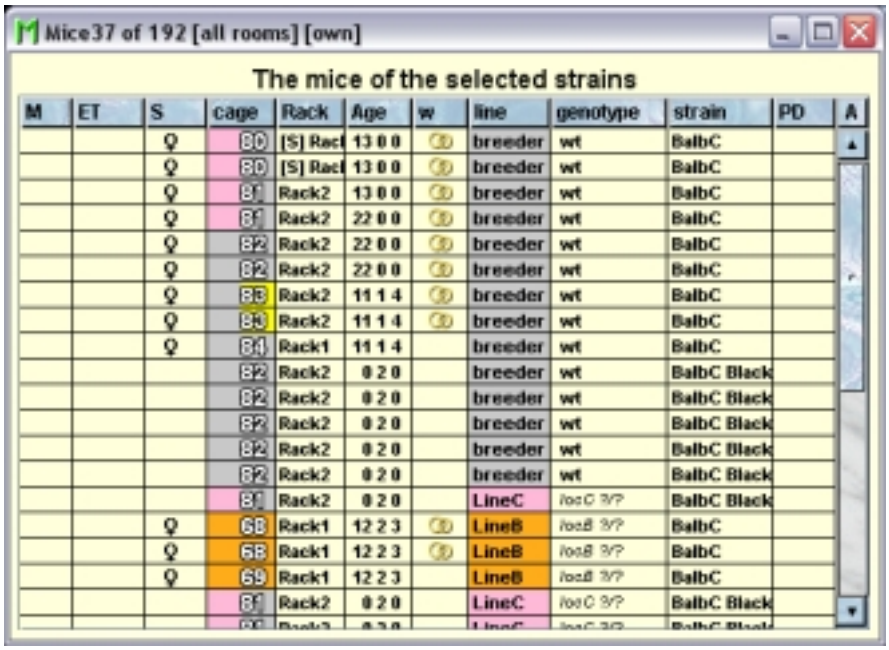
- **Maturity**:You can set a default age when mice of the particular strain become sexually mature. Note: Placing a male and a female in the same cage will not make it a breeding cage unless both mice have reached sexual maturity. The default is six weeks or 42 days. It can be freely defined between 21 and 56 days (for details see: **Matings**). You will use this field only if all mice of a given strain show an altered age of sexual maturity.
- **entered by**: Shows the name of the user who entered this strain into the database. This field cannot be edited.
- **Comments**: In this field you can type in comments to the respective cage. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one object is selected.

11.3.2The "Mice" tab

In this tab you see a table with the mice which belong at least partly to one of the selected strains.



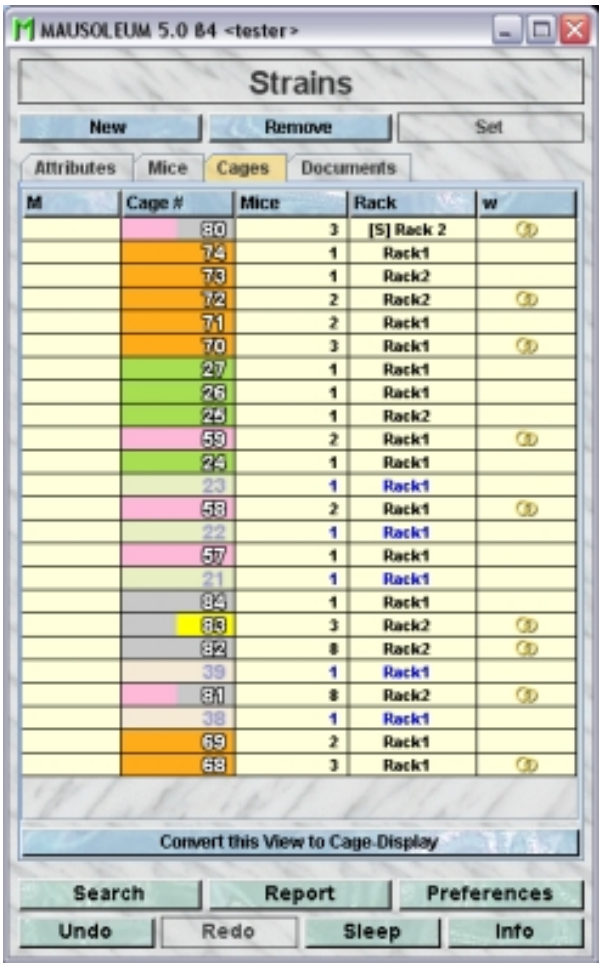
Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containing the mice will open:



M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
		♀	80	[S] Rack	13 0 0		breeder	wt	BalbC		
		♀	80	[S] Rack	13 0 0		breeder	wt	BalbC		
		♀	81	Rack2	13 0 0		breeder	wt	BalbC		
		♀	81	Rack2	22 0 0		breeder	wt	BalbC		
		♀	82	Rack2	22 0 0		breeder	wt	BalbC		
		♀	82	Rack2	22 0 0		breeder	wt	BalbC		
		♀	83	Rack2	11 1 4		breeder	wt	BalbC		
		♀	83	Rack2	11 1 4		breeder	wt	BalbC		
		♀	84	Rack1	11 1 4		breeder	wt	BalbC		
			82	Rack2	0 2 0		breeder	wt	BalbC Black		
			82	Rack2	0 2 0		breeder	wt	BalbC Black		
			82	Rack2	0 2 0		breeder	wt	BalbC Black		
			82	Rack2	0 2 0		breeder	wt	BalbC Black		
			82	Rack2	0 2 0		breeder	wt	BalbC Black		
			81	Rack2	0 2 0		LineC	loxC 3/?	BalbC Black		
		♀	68	Rack1	12 2 3		LineB	loxB 3/?	BalbC		
		♀	68	Rack1	12 2 3		LineB	loxB 3/?	BalbC		
		♀	69	Rack1	12 2 3		LineB	loxB 3/?	BalbC		
			81	Rack2	0 2 0		LineC	loxC 3/?	BalbC Black		

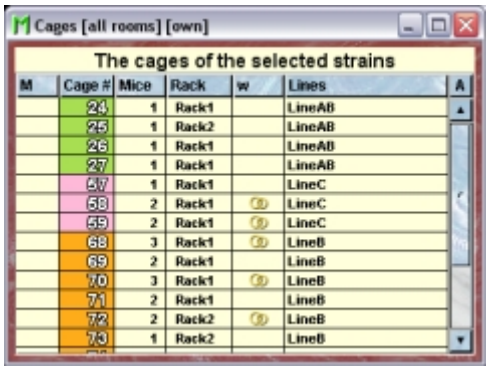
11.3.3The "Cages" tab

In this tab you see a table with the cages which contain mice which belong at least partly to one of the selected strains.



M	Cage #	Mice	Rack	w
	80	3	[S] Rack 2	
	74	1	Rack1	
	73	1	Rack2	
	72	2	Rack2	
	71	2	Rack1	
	70	3	Rack1	
	27	1	Rack1	
	26	1	Rack1	
	25	1	Rack2	
	59	2	Rack1	
	24	1	Rack1	
	23	1	Rack1	
	58	2	Rack1	
	22	1	Rack1	
	57	1	Rack1	
	21	1	Rack1	
	84	1	Rack1	
	83	3	Rack2	
	82	8	Rack2	
	39	1	Rack1	
	81	8	Rack2	
	38	1	Rack1	
	69	2	Rack1	
	68	3	Rack1	

Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cagee table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



11.3.4The "Documents" tab

This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the strains of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking

the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

11.4 Adding strains

Only GURUs can add and remove strains. To add a new mouse strain you click "**Strains**" in the object selection field of the inspector. The table of strains opens. In the Strain-inspectoryou click the "**New**"-button. Give the name of the strain or an abbreviation that will easily identify and separate the strain from other similar strains.

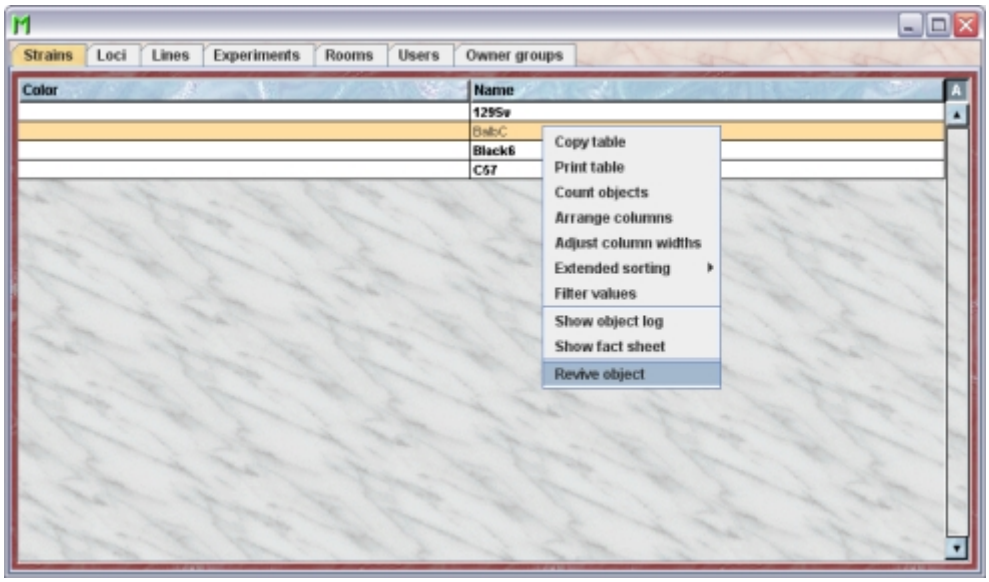
11.5 Removing strains

Only GURUS can remove strains. Removing a strain will not remove it from the database. It merely becomes invisible to the users and cannot be selected for a mouse anymore. But mice for which the respective strain was assigned keep it even if it was removed.
To remove a particular strain select it in the strain table and click the "**Remove**"-button in the strain inspector. If you answer the security diaolg with "**YES**" the strain will become invisible.

11.6 Reviving strains

The GURU of Group can revive removed strains. To do so first you have to make the strain visible in the starin table. You can do it using the "A" button in the upper right corner of the table.

Then you have to select the particular strain and select "Revive object" in the context menu (invoked by right mouse click)


Strains
Loci
Lines
Experiments
Rooms
Users
Owner groups
Color
Name
129Sv
BalbC
Black6
C57
Copy table
Print table
Count objects
Arrange columns
Adjust column widths
Extended sorting
Filter values
Show object log
Show fact sheet
Revive object

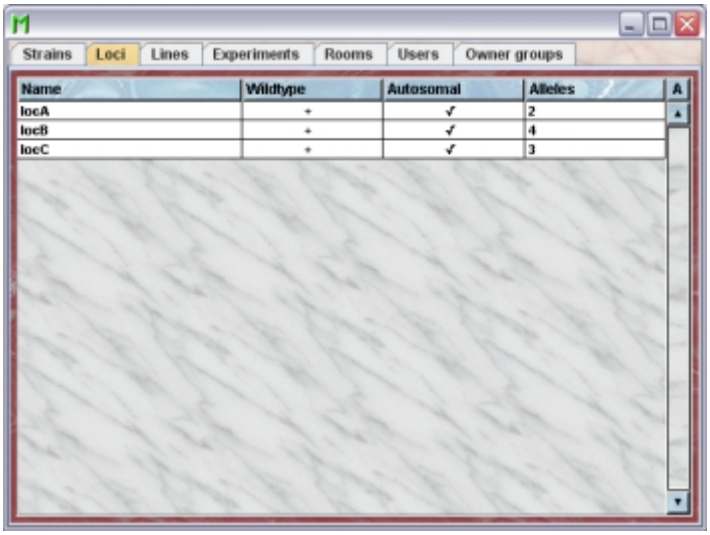
12 Loci

12.1 In brief

Loci represent in Mausoleum genetic loci and are the building blocks for the transgenic lines. They are characterized by their name and links to the ENSEMBL and MGI databases can be defined to obtain additional information. Alleles of a locus can be defined from which the genotypes of mice are generated. Only GURUs can add and define loci.

12.2 The Locus table

By clicking "**Loci**" in the object selection field of the Inspector you will get a window with the table of all actually defined loci of the group.



Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the loci should be shown in this table. These attributes are available for the locus table:

Column header	Description	Sortable	Filterable	Colorable
Alleles	The number of different alleles	X		
Autosomal	Indicates whether this locus is autosomal	X	X	
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Name	The name of the locus	X		
Wildtype	The wild type allele	X	X	
end	The end date of the object	X		

start	The start date of the object	X		

In the locus table a GURU can specify whether only the active loci should be displayed in the table or also the inactivated loci. To switch between these display modes you use the little "**A**" button in the top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

12.3 The Locus inspector

The locus inspector is active as soon as the locus table becomes the active table. It will adopt to the attributes of the selected locus and lets the user modify the attributes if the user has sufficient privileges to do so. The locus inspector has five tabs

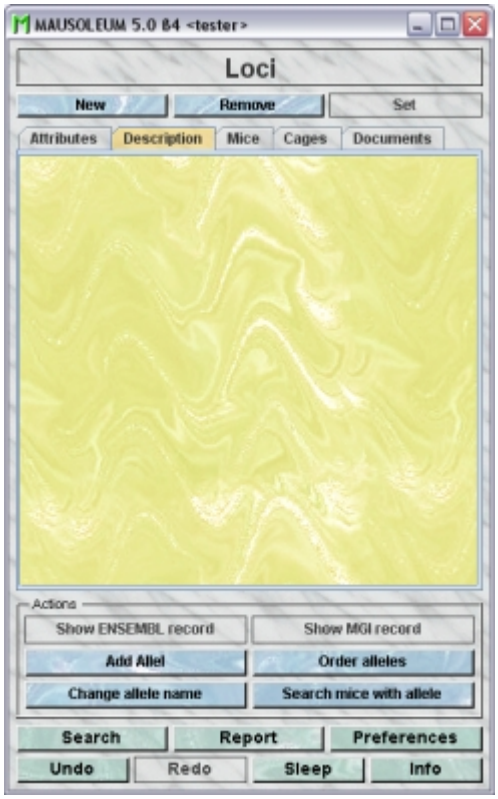
12.3.1 The "Attributes" tab

It shows the attributes of the locus:

- **Name**:It shows the name of the locus which can be edited by GURUs. The space on cage cards is limited. It is therefore wise to make Locus and allel names short. As there are formal rules for naming genes and transgenes, they may be better suited for the description box. For locus name terminology see **this document**.
- **ENSEMBL-ID**: Here you can enter the gene-ID as given by the **ENSEMBL-project**.

- **MGI-ID**: Here you can enter the gene-ID as given by the **Mouse Genome Informatics** database of **The Jackson Laboratory**
- **autom. genotyping**: Here you can manually override the setting for automatic genotyping for each locus individually. If automatic genotyping is enabled Mausoleum will set the genotype of offspring if its unequivocal. E. g. If both parents are +/+ for a given locus then the pup will also be +/+ for this locus. If the parents are +/+ and -/-for a given locus then the pup wil have the automatically generated genotype +/-. If automatic genotyping is disabled the user has to enter the genotype also in these cases.

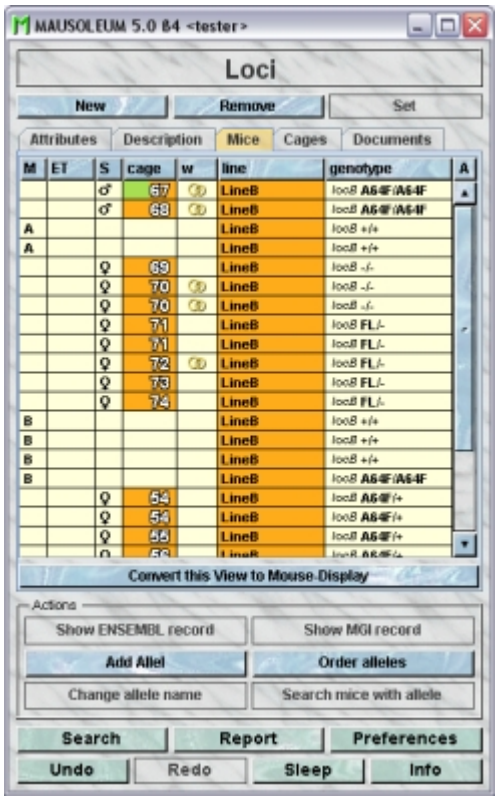
12.3.2The "Description" tab



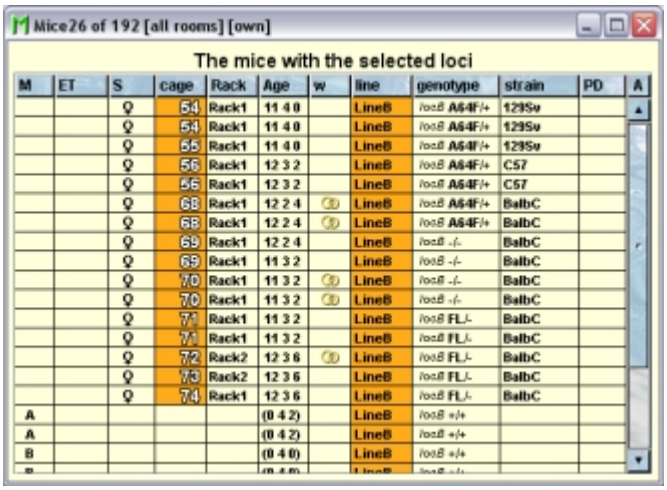
In this tab you can use the text field to enter a more thorough description of the selected locus. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one locus is selected.

12.3.3The "Mice" tab

In this tab you see a table with the mice which have a line with one of the selected loci.

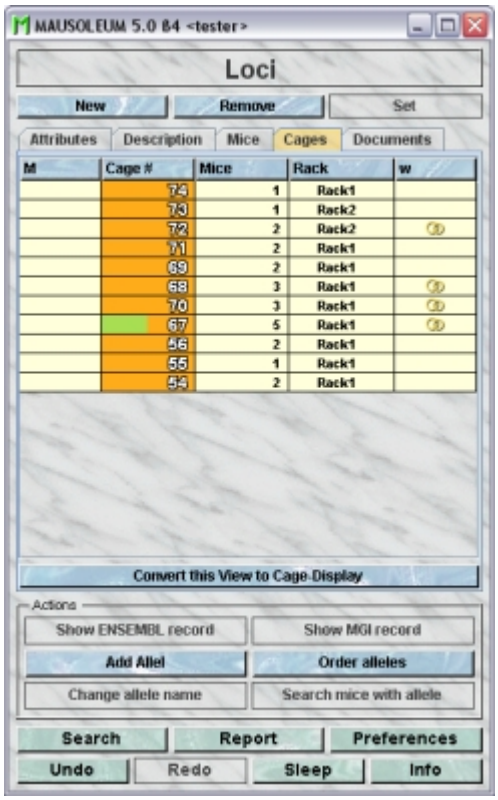


Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containing the mice will open:

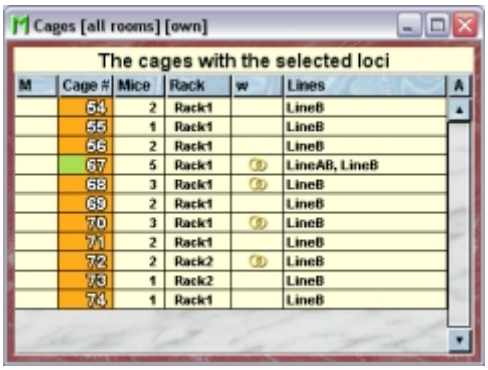


12.3.4The "Cages" tab

In this tab you see a table with the cages which contain mice which have a line with one of the selected loci.



Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cage table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



12.3.5The "Documents" tab

This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the loci of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

12.4 The actions

In the "Actions" area of the inspector you find several blue buttons which invoke various actions not directly connected to the attributes of the selected objects:

Show ENSEMBL record: If an ENSEMBL-ID is defined for the selected locus, a web browser will be opened with the corresponding web-page from the **ENSEMBL-project**.

Show MGI record:If an MGI-ID is defined for the selected locus, a web browser will be opened with the corresponding web-page at the **Mouse Genome Informatics** server of **The Jackson Laboratory**

Add allele: You can always add new alleles but it is not possible to remove alleles later on. For a new allele you just need to specify the name of the allele:

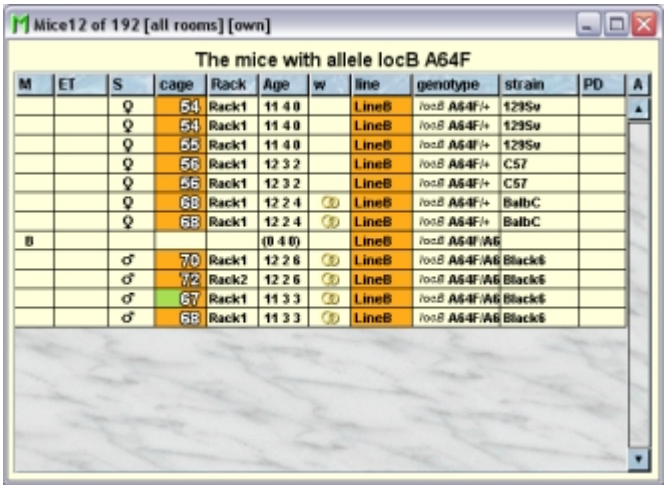
A GURU, a MASTER or a STUDENT can add alleles to a locus.

Order alleles: You can specify the order of the alleles. This will not only determine the order by which they are shon in the inspector but it is the baiss for the order of alleles in the presentation of genotypes. If you have heterozygous mice the allele with the lower rank (more on top of the list) will be shown first. If you click this button a dialog opens which lets you specify the order of the alleles

To change the order you select an allele and move it by clicking "**Move up**" or "**Move down**" to the desired position.
A GURU, a MASTER or a STUDENT can change the order of alleles.

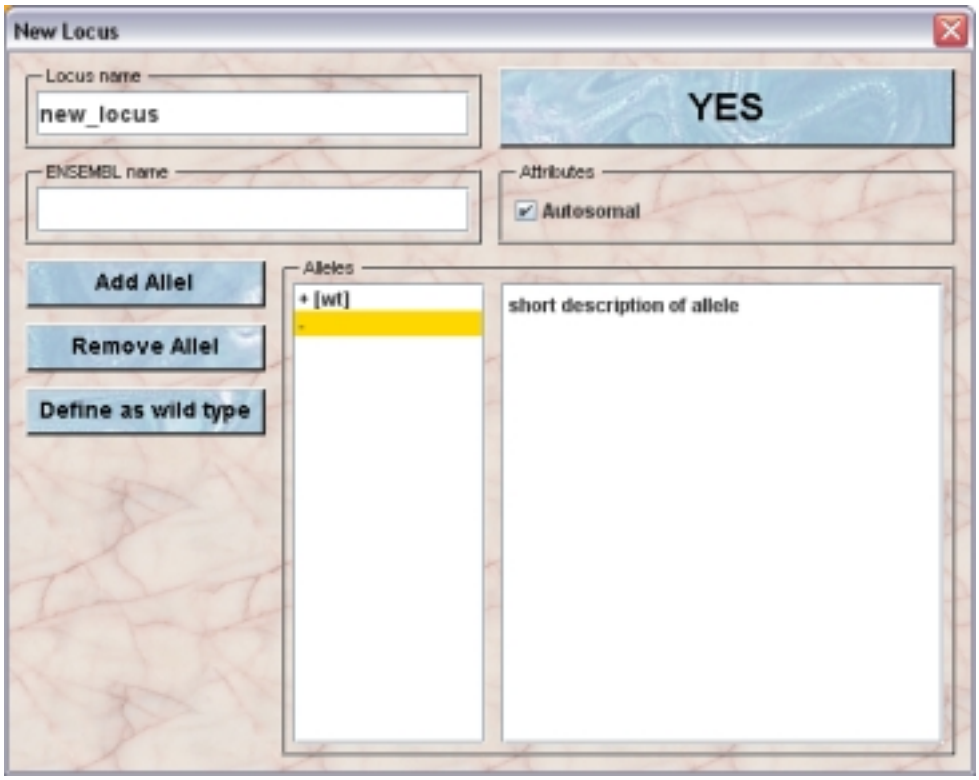
Change allele name: You can change the name which will be shown for the given allele later on. First you have to select an allele in the allele-list. After clicking thgis button you will be asked for the new name:

Search mice with allele: You can search the database for all living mice which have a specific allelel, Therefore you have to select thsi allele in the allele-list After clickcing this button you will get a tabel with all the living mice having thgi s allele.



12.5 Adding Loci

Only GURUs can add new loci. To add a locus you click Loci (a list of loci opens) and then New.



The locus should then be named and you can also identify the locus by the name in the ENSEMBL genome sequencing project. There are rules for naming (trans-)genes and genes modified by homologous recombination. See **The Jackson Laboratory** for a full description or **this document** for an introduction to correct transgenic names. These are often long and not always informative.
Then decide what you want to call the alleles. + for wt and - for knock out are the defaults. A suggestion for naming loci and alleles can be found **here**. You can add and remove alleles at this stage using the "**Add Allel**" or "**Remove Allel**" buttons.
Defining the wild type is done by selecting one allel in the list and clicking the button "**Define as wild type**".
The information whther the locus is autosomal or not has to be specified in the checkbox when the locus is cretaed. Sinde this has a profound effect on the possible genotypes it **cannot be changed afterwards**.
After creating a locus you can select it in the list of loci and add information in the inspector. It may be wise to add the proper gene name in the description box if you abbreviated it earlier.

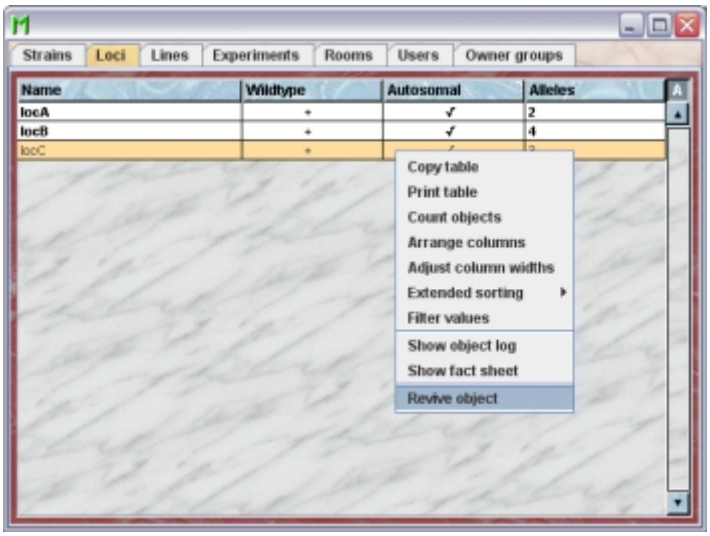
12.6 Removing loci

Only GURUS can remove loci. Removing a locus will not remove it from the database. It merely becomes invisible to the users and cannot be selected for a line anymore. But lines for using the respective locus keep it even if it was removed.
To remove a particular locus select it in the locus table and click the "**Remove**"-button in the locus inspector. If you answer the security dialog with "**YES**" the locus will become invisible.

12.7 Reviving loci

The GURU of Group can revive removed loci. To do so first you have to make the locus visible in the locus table. You can do it using the "A" button in the upper right corner of the table.

Then you have to select the particular locus and select "Revive object" in the context menu (invoked by right mouse click)



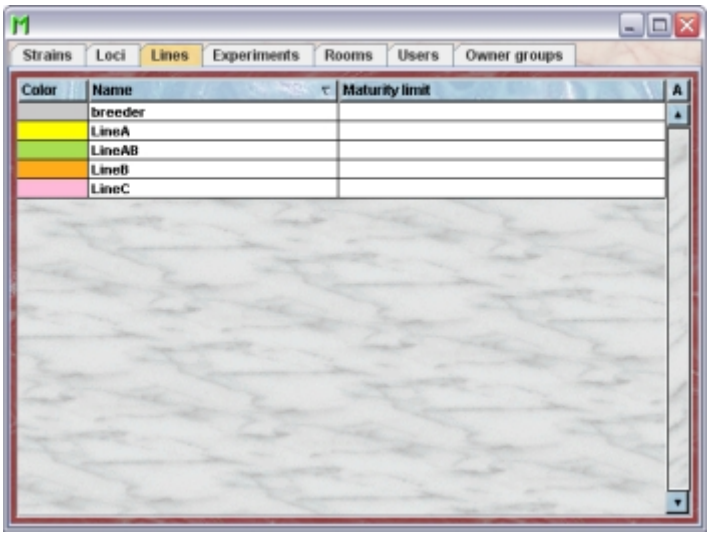
13 Lines

13.1 In brief

Lines represent the transgenic lines of your mice. They contain the definition which alleles you can expect for a defined subset of your **loci**. Thus at least one locus need to have been defined before a line can be created. Only GURUs can add and edit lines. Creating a new line starts with giving a name choosing a colour and assigning one or several loci to the line. When you create the line you can choose if some of the alleles defined for the locus do not appear in the line and if these can be excluded. Allels can later also be added but not taken away.
There is one special line which is generated when a group is created. This the "**breeder**" group. This line is chosen for the wild-type animals which are used for matings with your transgenic animals. In this line neither loci nor alleles are defined. Therefore the only possible genotype for animlas of this line is wild-type ("wt").
Assigning a line to mouse determines which genotypes are possible for the particular mouse. The order by which the loci appear can be changed according to your wish. The order of the alleles in a genotype, i. e. will it be displayed as +/- or -/+ is governed by the order of the alleles in the respective locus.
Creating a mixtiure of lines which occurs by breeding animals from different lines is possible. The program will collect the necessary loci and alleles and you do not need to define them by hand. You can also produce a report of the result from breeding defined genotypes together. Eg. A large number of offspring from breeding heterozygous animals without any being homozygous could indicate a genotype causing embryonic lethality.

13.2 The Line table

By clicking "Lines" in the object selection field of the Inspector you will get a window with the table of all actually defined lines of the group.



Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the line should be shown in this table. These attributes are available for the locus table:

Column header	Description	Sortable	Filterable	Colorable
Color	The color used for this line	X		
Eartag prefix	MTM_TT_PREFIX	X	X	
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Maturity limit	The maturity limit. I. e. the time in days for the mouse to become sexually active. Default value is 42 (6 weeks)	X	X	
Name	The name of the line	X		
end	The end date of the object	X		
start	The start date of the object	X		
tag	Alphanumeric Tag	X	X	

In the line table a GURU can specify whether only the active lines should be displayed in the table or also the inactivated lines. To switch between these display modes you use the little "**A**" button in top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

13.3 The Line inspector

The line inspector is active as soon as the line table becomes the active table. It will adopt to the attributes of the selected line and lets the user modify the attributes if the user has sufficient privileges to do so. Only GURUs can add and edit lines. The locus inspector has four tabs

13.3.1The "Attributes" tab

It shows the attributes of the locus:

- **Name**: The name of the line. It can be changed by the GURU
- **Tag**: An alphanumeric tag which can be used to mark or group lines. It can be set or changed by the GURU
- **Eartag prefix**: Depending on the kind of tagging the mice the numbers for the eartag can be limited. In this case it can be useful to use the eartag prefix of a line. This prefix will be set in front of the eartag of the mice. This makes it possible to reuse one eartag number multiple times if the mice belong to different lines. The GURU can enter here any alphanumeric value. But it is recommended to use short prefixes.
- **Maturity limit**: You can set a default age when mice of the particular line become sexually mature. Note: Placing a male and a female in the same cage will not make it a breeding cage unless both mice have reached sexual maturity. The default is six weeks or 42 days. It can be freely defined between 21 and 56 days (for details see: **Matings**). You will use this field only if all mice of a given line show an altered age of sexual maturity.The value will be entered using this dialog:

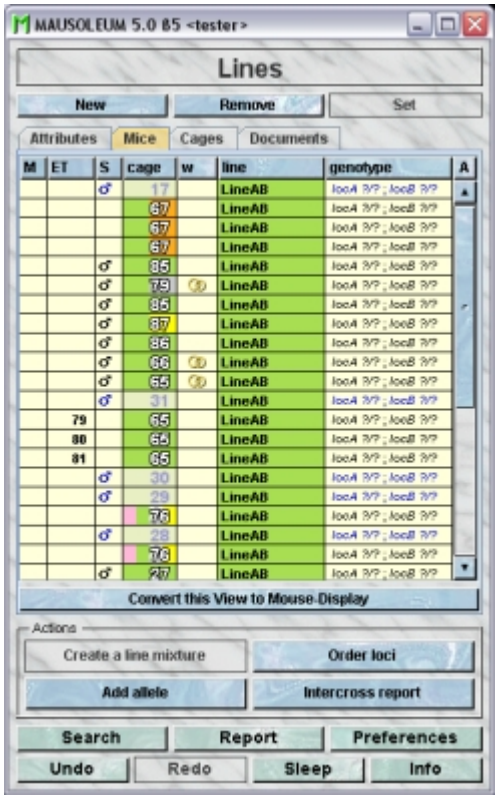
- **automatic genotyipng**: Here you can manually override the setting for automatic genotyping for each line individually. If automatic genotyping is enabled Mausoleum will set the genotype of offspring if its unequivocal. E. g. If both parents are +/+ for a given locus then the pup will also be +/+ for this locus. If the parents are +/+ and -/-for

a given locus then the pup wil have the automatically generated genotype +/-. If automatic genotyping is disabled the user has to enter the genotype also in these cases.

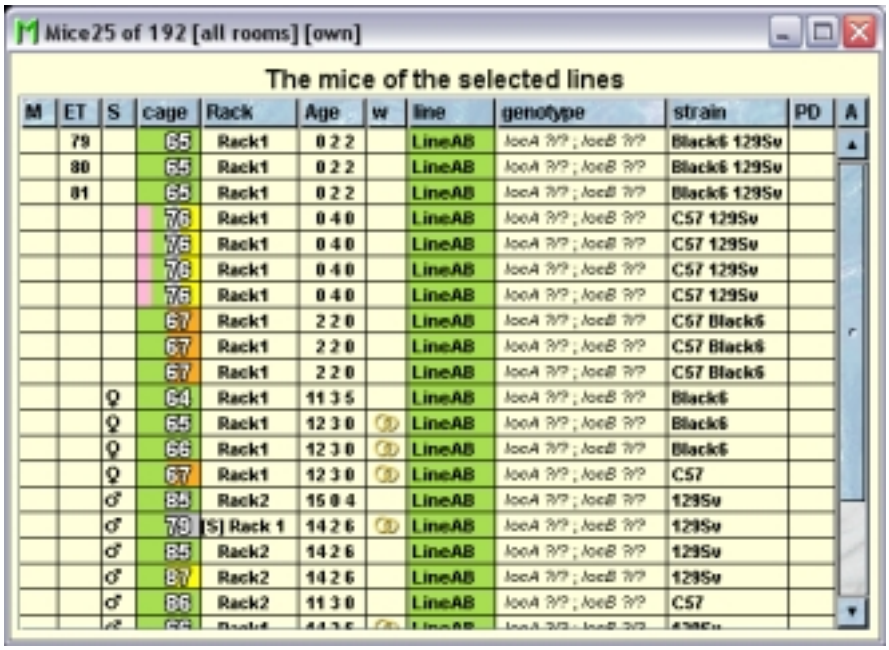
- **Color**: The GURU can assign a color to a strain. It is very convenient to assign colours such that lines can be discerned or grouped. You can use plain colors or color patterns. A description of the Color choose dialog can be fond **here**.
- A list of the **loci** and their alleles which are present in the selected line is shown. The order by which the loci appear in a genotype from a mouse of the selected line is determined by the order of the loci as shown in this list and can be changed according to your wish. The order of the alleles in a genotype, i. e. will it be displayed as +/- or -/+ is governed by the order of the alleles in the respective locus.
- **Description**: In this field you can type in comments to the respective cage. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one object is selected.

13.3.2The "Mice" tab

In this tab you see a table with the mice which have one of the selected lines.



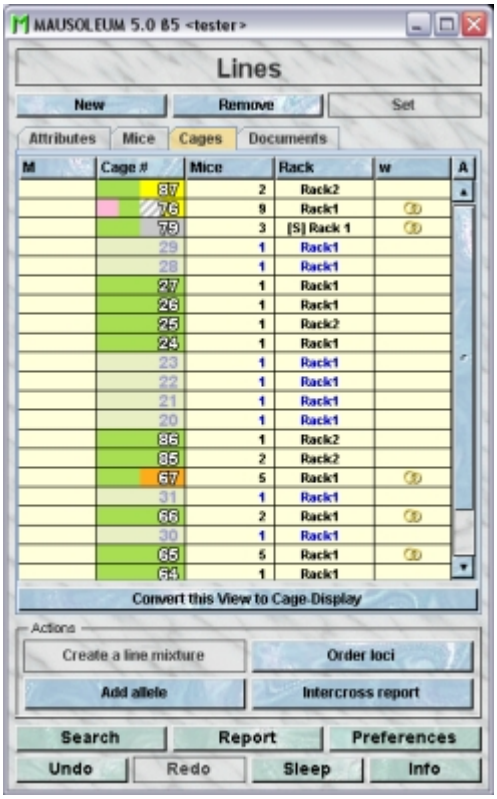
Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containing the mice will open:



M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
	79		65	Rack1	0 2 2		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	80		65	Rack1	0 2 2		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	81		65	Rack1	0 2 2		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
			76	Rack1	0 4 0		LineAB	locA ?/? ; locB ?/?	C57 129Sv		
			76	Rack1	0 4 0		LineAB	locA ?/? ; locB ?/?	C57 129Sv		
			76	Rack1	0 4 0		LineAB	locA ?/? ; locB ?/?	C57 129Sv		
			76	Rack1	0 4 0		LineAB	locA ?/? ; locB ?/?	C57 129Sv		
			67	Rack1	2 2 0		LineAB	locA ?/? ; locB ?/?	C57 Black6		
			67	Rack1	2 2 0		LineAB	locA ?/? ; locB ?/?	C57 Black6		
			67	Rack1	2 2 0		LineAB	locA ?/? ; locB ?/?	C57 Black6		
		♀	64	Rack1	11 3 5		LineAB	locA ?/? ; locB ?/?	Black6		
		♀	65	Rack1	12 3 0	!	LineAB	locA ?/? ; locB ?/?	Black6		
		♀	66	Rack1	12 3 0	!	LineAB	locA ?/? ; locB ?/?	Black6		
		♀	67	Rack1	12 3 0	!	LineAB	locA ?/? ; locB ?/?	C57		
		♂	84	Rack2	15 0 4		LineAB	locA ?/? ; locB ?/?	129Sv		
		♂	79	[S] Rack 1	14 2 6	!	LineAB	locA ?/? ; locB ?/?	129Sv		
		♂	84	Rack2	14 2 6		LineAB	locA ?/? ; locB ?/?	129Sv		
		♂	87	Rack2	14 2 6		LineAB	locA ?/? ; locB ?/?	129Sv		
		♂	86	Rack2	11 3 0		LineAB	locA ?/? ; locB ?/?	C57		

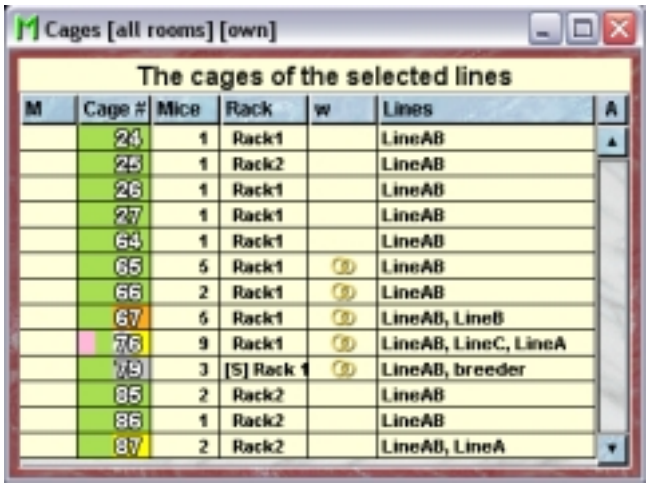
13.3.3The "Cages" tab

In this tab you see a table with the cages which contain mice which have one of the selected lines.



M	Cage #	Mice	Rack	w	A
	87	2	Rack2		
	76	9	Rack1	!	
	79	3	[S] Rack 1	!	
	29	1	Rack1		
	28	1	Rack1		
	27	1	Rack1		
	26	1	Rack1		
	25	1	Rack2		
	24	1	Rack1		
	23	1	Rack1		
	22	1	Rack1		
	21	1	Rack1		
	20	1	Rack1		
	86	1	Rack2		
	85	2	Rack2		
	67	5	Rack1	!	
	31	1	Rack1		
	66	2	Rack1	!	
	30	1	Rack1		
	65	5	Rack1	!	
	64	1	Rack1		

Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cage table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



M	Cage #	Mice	Rack	w	Lines	A
	24	1	Rack1		LineAB	
	25	1	Rack2		LineAB	
	26	1	Rack1		LineAB	
	27	1	Rack1		LineAB	
	64	1	Rack1		LineAB	
	65	5	Rack1		LineAB	
	66	2	Rack1		LineAB	
	67	5	Rack1		LineAB, LineB	
	76	9	Rack1		LineAB, LineC, LineA	
	79	3	[S] Rack 1		LineAB, breeder	
	85	2	Rack2		LineAB	
	86	1	Rack2		LineAB	
	87	2	Rack2		LineAB, LineA	

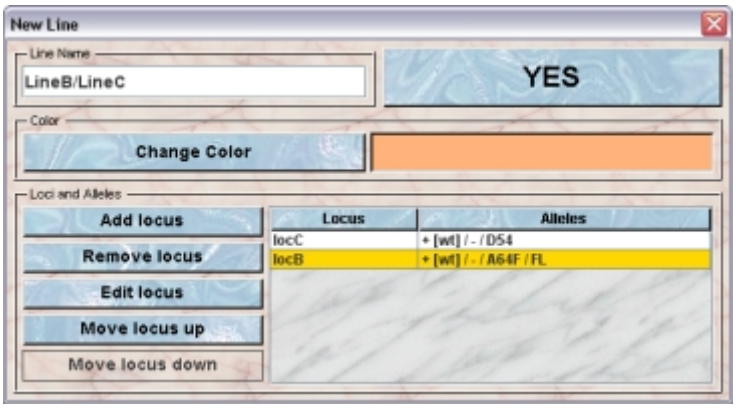
13.3.4The "Documents" tab

This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the lines of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

13.4 The actions

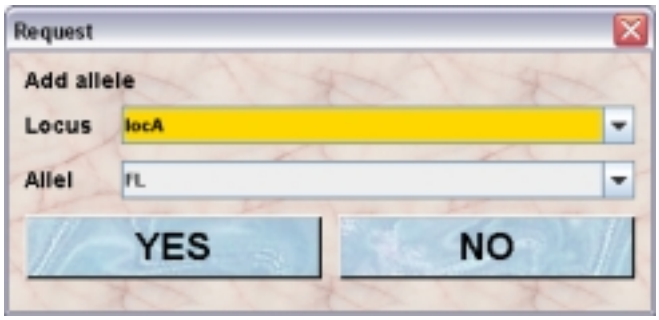
Create a line mixture: The GURU can create a line mixture. This is the standard procedure when creating a new line from breeding two lines together. It is simpler than defining a new line from scratch. By selecting two lines in the list you get the option to create a line mixture. This is more convenient than creating a new line with all involved loci. The GURU of a group can create mixture lines. First you have to select the lines for which you want to create the mixture line. After clicking this button you will get a dialog which shows the generate line information. You might want to change the name which is set to the combined names or the color which was set to the mixed color of the two lines. You can also edit the locus and allele-composition of the line which can be done by clicking the buttons to the left of the locus and alleles table in the dialog:



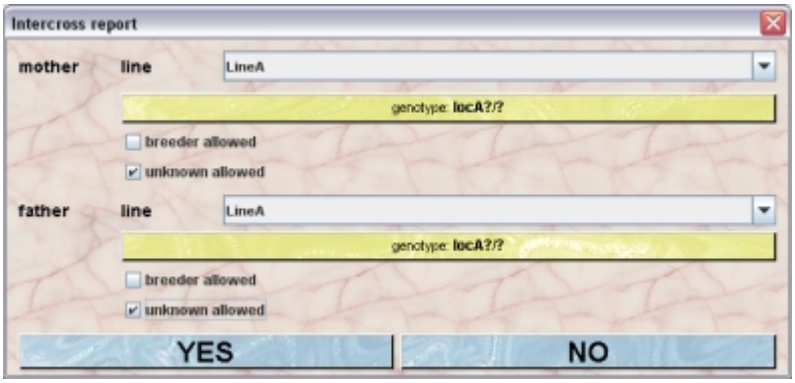
Order loci: When several loci are defined for a line it may also be a good idea to order them such that the important information is most accessible in tables and on cage cards. In the inspector you see the list of the loci and their alleles which are present in the selected line is shown. The order by which the loci appear in a genotype from a mouse of the selected line is determined by the order of the loci as shown in this list and can be changed according to your wish. The order of the alleles in a genotype, i. e. will it be displayed as +/- or -/+ is governed by the order of the alleles in the respective locus. Clicking this button will bring up a dialog in which you can modify the locus order by selecting a locus and then clicking either "**Move up**" or "**Move down**"

Add allele: If you have added alleles to a locus after the line was created you have the option of adding them individuially to the line. This is convenient if you for example have several

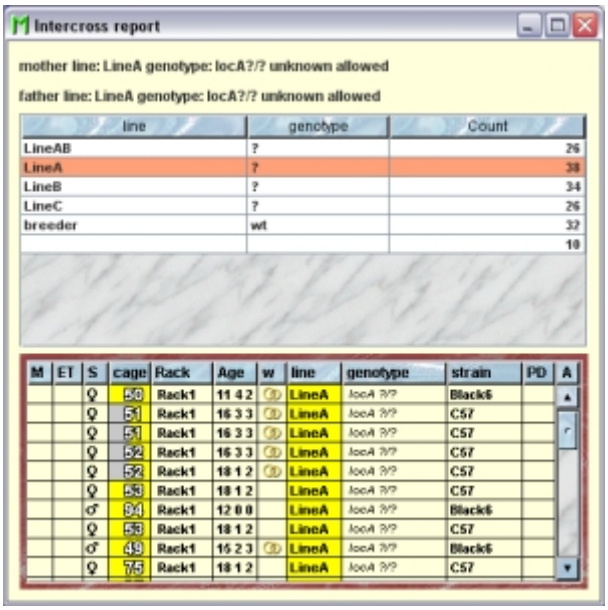
variant construct over the same locus. You create the wt and ko alleles to start with. After creating the different lines you add alleles to your locus such as loxP or FRT flanked parts and alleles created by the presence of a recombinase. This way you can exclude alleles that will not appear in a substrain. It is not possible to remove alleles from a line. After clicking this button ou will get this dialog. In the upper selection field you select the locus, which is included in the selected line. In the lower selection field you can select from the alleles of the selected locus which are not already available in this line



Intercross report:You can produce a report of the result from breeding defined genotypes together. Eg. A large number of offspring from breeding heterozygous animals without any being homozygous could indicate a genotype causing embryonic lethality. After clicking this button you get a dialog allwoing you to specify the line and genotyes for the father and mother, You can also allow breeder animals as parents or allow that on of the parents is unknown.



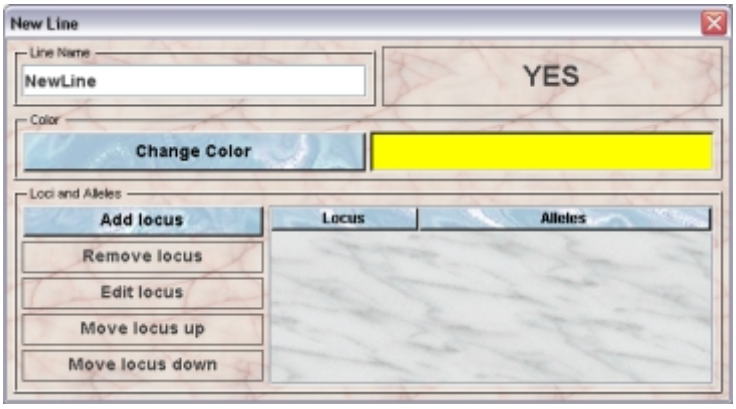
By clicking "**YES**" in this dialog will start the intercross report generation. Mausoleum will then check the mice whether their parents match the conditions and group the mice witgh matching parents by line and genotype. In the result window you see after a while a table where the the overall results are shown.



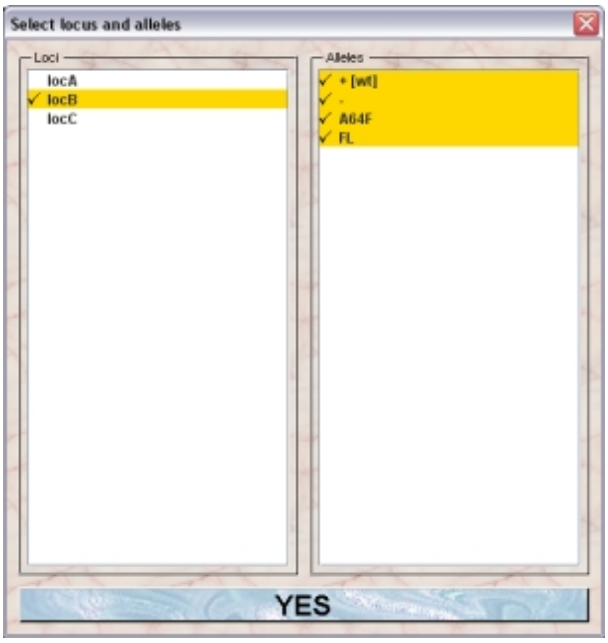
Clicking in one of the lines shows the collected offspring in the mouse table beneath the result table. If the number of mice in this table differs from the one shown in the result table please check the "**A**" in the upper right corner of the mouse table which controls the visibility of mice by ownership.

13.5 Adding lines

Only GURUs can add new lines. To add a (transgenic) line you click "**Lines**" in the object selection field of the Inspector. In the line inspector you click the "**New**"-button. A dialog opens where you can specify the data for the new line:



Give the Line a name and a colour. You can use plain colors or color patterns. A description of the Color choose dialog can be fond **here**. It is very convenient to assign colours such that lines can be discerned or grouped. Name and color of the line can be changed afterwards.
Add one or several loci to the transgenic line by clicking the "**Add locus**"-button. You will get a dialog allowing you to specify the locus and the alleles which will be present in the new line:

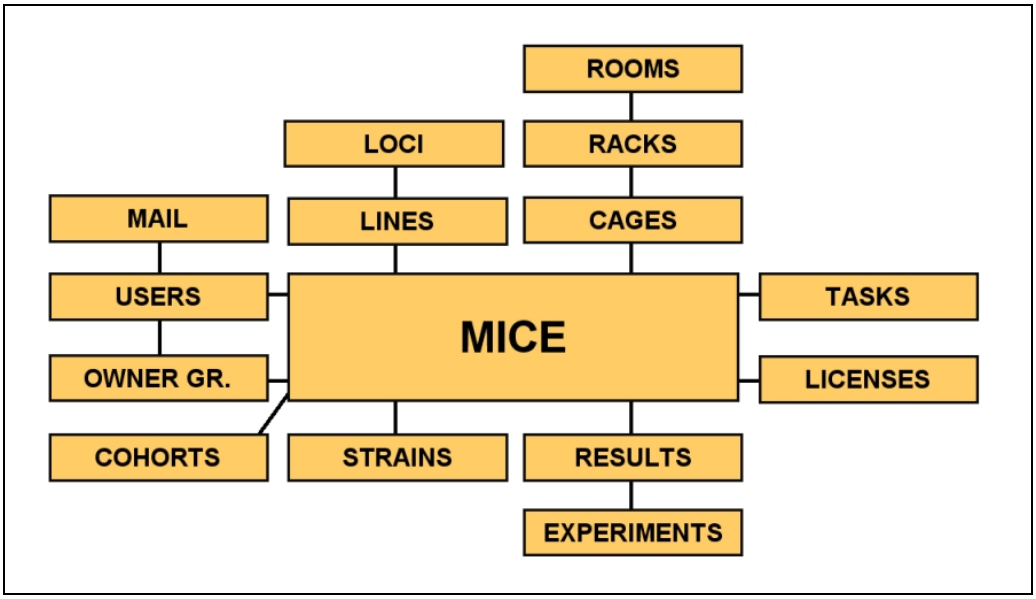


When you select a locus in the left list the defined alleles of this locus are shown in the right table. You can select or deselect the alleles by clicking on the names. The alleles which will be present in the line are shown with a checkmark in front of the name. Clicking "**Yes**" will add the selected locus with the selected alleles to your new line.
It is possible at this stage to remove a locus. Therefore select the locus you want to remove in the table and click "**Remove locus**". After the line is defined and stored in the database it is not possible to add or remove loci.
The order by which the loci appear in a genotype from a mouse of the selected line is determined by the order of the loci as shown in this list and can be changed according to your wish. You can change the order of the loci by selecting a locus in the table and click either "**Move locus up**" or "**Move locus down**". The order of the loci can be changed afterwards.
If you detect that you didn't specify the alleles of a particular locus properly when you added the locus before you can edit the locus. This means you can change the alleles which are used in the new line for that locus. To do so select the locus in the table and click the "**Edit locus**"-button.In the dialog you can select or deselect the alleles to be included in the new line by clicking on their names. The alleles which will be present in the line are shown with a checkmark in front of the name. Clicking "**Yes**" will set the highlighted alleles to be used for th selected locus in your new line.

14 Mice

14.1 In brief

Mice are of course the most interesting and important objects handled by Mausoleum. Indeed all objects in the database are linked - directly or indirectly - to the mice in your database. The following drawing depicts the most important connections between the deifferent objects and their relation to the mice in mausoleum:



How to manage these connections and the inner indepent attributes of the mice is the main focus of this chapter. A detailed description of the attributes of a mouse, how they are visualized and how to set or change them can be found below.

14.2 The mouse table

After clicking "**Mice**" in the object selection area of the inspector you will get the mouse window.

M	ET	S	cage	Rack	Age	w	line	genotype	strain	PD	A
	5	♀	69	Rack1	12 0 4		LineB	locB -/-	BalbC		
	6	♀	70	Rack1	12 0 4		LineB	locB -/-	BalbC		
	7	♀	70	Rack1	12 0 4		LineB	locB -/-	BalbC		
W	8		76	Rack1	1 1 1		LineAB	locA +/+ ; locB A64F/+	C57 129Sv		
W	9		76	Rack1	1 1 1		LineAB	locA +/+ ; locB A64F/+	C57 129Sv		
W	10		76	Rack1	1 1 1		LineAB	locA +/+ ; locB A64F/+	C57 129Sv		
	11	♂	93	Rack1	15 0 0		breeder	wt	Black6		
	12	♂	8	Rack1	15 0 0		breeder	wt	Black6		
	13	♂	7	Rack1	15 0 0		breeder	wt	129Sv		
	25	♀	82	Rack2	22 1 6		breeder	wt	BalbC		
	26	♀	82	Rack2	22 1 6		breeder	wt	BalbC		
	27	♀	83	Rack2	11 3 3		breeder	wt	BalbC		
	28	♀	83	Rack2	11 3 3		breeder	wt	BalbC		
	29	♀	84	Rack1	11 3 3		breeder	wt	BalbC		
	30	♀	46	Rack1	15 3 3		LineA	locA ?/?	Black6		
	31	♀	46	Rack1	15 3 3		LineA	locA ?/?	Black6		
	32	♀	47	Rack1	15 3 3		LineA	locA ?/?	Black6		
	33	♀	47	Rack1	11 0 0		LineA	locA ?/?	Black6		
	34	♀	48	Rack1	11 0 0		LineA	locA ?/?	Black6		
	35	♀	48	Rack1	11 0 0		LineA	locA ?/?	Black6		
	36	♀	49	Rack1	12 0 6		LineA	locA ?/?	Black6		
	78	♀	50	Rack1	12 0 6		LineA	locA ?/?	Black6		
	79		65	Rack1	0 3 6		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	80		65	Rack1	0 3 6		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	81		65	Rack1	0 3 6		LineAB	locA ?/? ; locB ?/?	Black6 129Sv		
	123	♀	53	Rack1	18 2 2		LineA	locA ?/?	C57		
	123	♂	63	Rack1	12 0 5		LineC	locC ?/?	Black6		
	124	♀	75	Rack1	18 2 2		LineA	locA ?/?	C57		
	124	♂	69	Rack1	20 0 1		LineC	locC ?/?	Black6		
	125	♀	76	Rack1	12 0 1		LineA	locA ?/?	C57		
	125	♂	61	Rack1	20 0 1		LineC	locC ?/?	Black6		
	126	♀	77	Rack1	12 0 1		LineA	locA ?/?	C57		
	126	♂	59	Rack1	20 0 1		LineC	locC ?/?	Black6		

This window contains different tabs with specialized mouse tables:

- **All mice**: This table holds the table with all the active mice of the group.
- **Cohorts**: This table shows the actual **mouse cohorts** defined in this group.
- **Removed mice**: In this table you find all mice wihich were killed or exported during your session.
- **New mice**: Here you find all mice which wer entered into the database nomatter whether they were introduced by littering, importing from another group or created.
- **Weaned mice**: This table contains all mice which were weaned during your session.

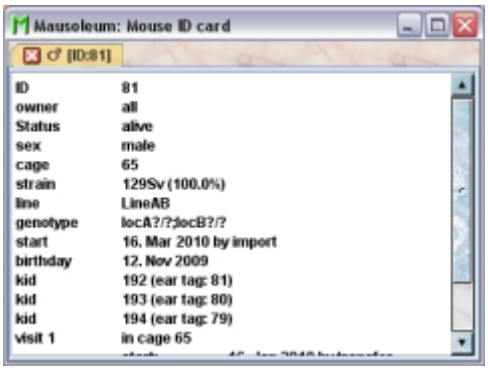
Using the command "Arrange columns" from the context menu (right mouse click in the table) you can specify which attributes of the mice should be shown in a mouse table. These attributes are available for a mouse table:

Column header	Description	Sortable	Filterable	Colorable
Age	The age of the mouse	X		X
All owners	All owners or owner groups of the mouse	X		X
Barcode	The Barcode for this mouse	X		
Cohorts	The cohorts to which the mouse belongs	X		X
ET	Eartag	X		X
End mode	The mode by which the mouse was removed from the actual mice	X	X	
Foreign key	Foreign ID from other system	X		

Generation (P/F)	Shows generation marker in P, F1, F2… style	X	X	
Group	Group name	X	X	
ID	The technical ID	X		
License	The license for this mouse	X	X	X
M	Mark	X	X	
Maturity limit	The maturity limit. I. e. the time in days for the mouse to become sexually active.	X	X	
Owner	Name of the primary user	X	X	X
PD	The Plug-date	X		
Rack	The rack in which the mouse is located	X	X	X
S	The Sex of the mouse	X	X	X
Start mode	The mode by which the mouse was introduced tnto the database	X	X	
birthday	The birthday of the mouse	X		X
cage	The cage in which the mouse is located	X	X	X
end	The end date of the object	X		
genotype	The genotype of the mouse	X		X
kids	The number of kids from the mouse	X		
line	The Line of the mouse	X	X	X
start	The start date of the object	X		
strain	The strain of the mouse	X	X	X
tag	Alphanumeric Tag	X		
w	Indicator for matings	X	X	X

In the mouse tables you can specify whether you want to see all objects of the group or only the objects you own. To switch between these display modes you use the little "**A**" button in top right corner of the table:

If this button is active (pressed) you will see all objects of the group. Your own objects are shown in black whereas objects owned by other users are shown with a blue font color.
Double clicking a mouse in a mouse table will bring up the ID card which contains more specific informations about the mouse.



More informations can be retreived by the **fact sheets** which can be obtained via the context menu (right mouse click) of a mouse table.

In this example of a mouse contex menu you see more items compared to other tables. The items available in all tables are explained in detail in **this chapter**. In a mouse tables you have three items giving you special parts of the **fact sheets**:

- **Mating report**: Shows all productive **matings** during the lifetime of the mouse. The litters are shown with statistical information. In addition the calculated mating efficiency for all matings is shown.
- **Visit report**: Shows all cage vistis of the mouse with entry date and end date if applicable. Also the cage mates during the time in the respective cage are listed.
- **Plug report**: The plug report is defined for male mice. Males do not get plug dates, but the performance of a male can be viewed.In the report all mating opportunities with dates for successful plugging are shown.
- The next four items of the context menu are functions for handling the Mausoleum pool of cages and mice described **here**. The items are:
- **Add to pool**:Adds the select mice to the Mausoleum pool.

- **Remove from mouse pool**: Removes the selected mice from the Mausoleum pool if possible.
- **Empty pool**:This wil empty the pool removing all mice and cages you put in.
- **Show pool**:Selecting this item will bring up the window with the pool snapshots as described above.

Below these items you find the items which correspond to the action buttons which are active at the moment. The activity of the buttons and the presence of items in the context menu is determined by the selected mices.

14.3 Mouse inspector

The mouse inspector is active as soon as a mouse table becomes the active table. It will adopt to the attributes of the selected mouse and lets the user modify the attributes if the user has sufficient privileges to do so. The mouse inspector has five tabs.

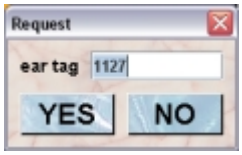
14.3.1 The "Attributes" tab

It shows the attributes of the selected mouse:

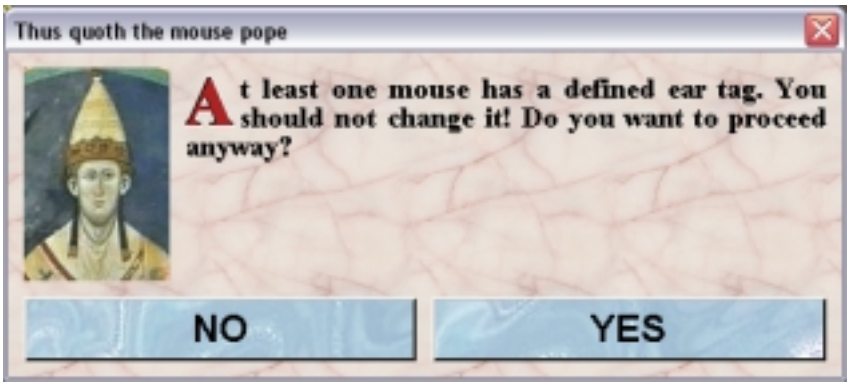
This tab with all the attributes of the selected mice will always appear independent of which columns are being shown in the mouse table. The yellow buttons will change information for all selected mice, except that the comment box will work only for single mice. See below for adding comments to several mice simultaneously. The behaviour of the buttons depends on the setting for "**Set mode**" in the **Preferences**. If set to "**immediate**" the change is (for most of the attributes) immediately written to the database. If set to "**Delayed**" the changes are collected and only transmitted to the databse, when the "**Set**"-button is pressed. If you are using Mausoleum in this mode it is important to click the "**SET**" button if any of the yellow

datafields turns red before leaving the tab or selecting other mice. Otherwise the data entered will be lost. Clicking "**YES**" in dialogs has the same function as the "**SET**" button.

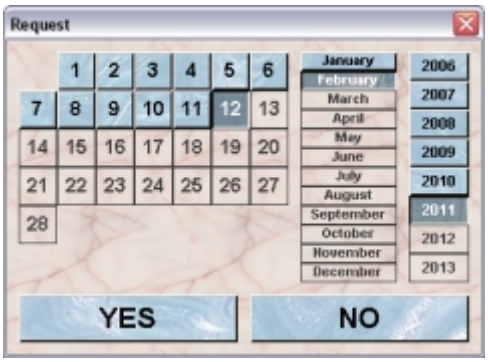
ear tag:
This button shows the eartag of the selected mice. The eartag is a numeric tag and corresponds to physical tags of the mouse. The eartag is supposed to be unique within the living mice. Therefore a defined eartag can only be shown if one mouse is selected. If the ertag is not specifed this button shows the label "**not set**". If more mice are selected and at least one of them has a defined eartag it shows "**multiple**". The eartag shown here might differ from what you see in mouse tables and cage cards. This is the case when you defined an **eartag prefix** in the line of the mice.
You set this value by clicking this button or by clicking in the corresponding cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:



The default value is the last set eartag +1 (assuming that you are using a set of clips or tags with consecutive numbers). You can specify whether or not the last set eartag should be kept in the database for the next session in the **Preferences**. If more than one mouse is selected the eartags are given to the selected mice as consecutive numbers.
Eartags are by default unique for the set of living mice of a group, but duplications are allowed after a grumble from the mouse pope. You will get also an alert if wou want to set eartags for mice for which the eartag is already defined:

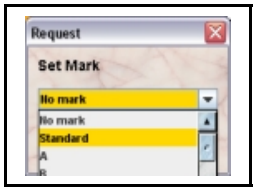


birthday:
This button shows the birthday of the selected mice. If the birthbay is not specifed for any of the selected mice this button shows the label "**not set**". If more mice are selected and no common birthday can be determined it shows "**multiple**". The date format can be chosen in the **Preferences**.
The birthday of mouse is defined automatically when the mouse was introduced in to database by **littering** If the mouse was created without a litter the birthday has to be specified manually. The brithday of a mouse can be set by clicking this button or by clicking in the "**Age**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this calendar dialog:

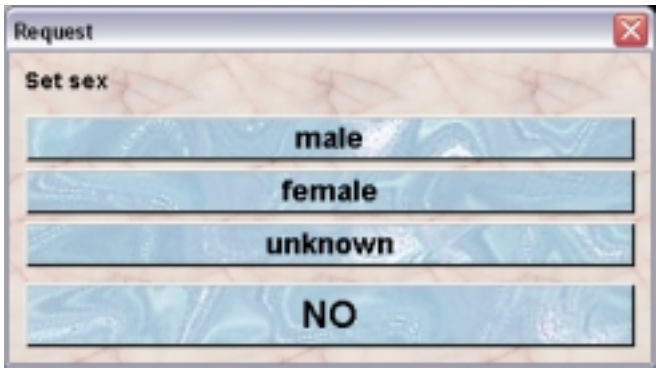


The birthday of a mouse is essential for the determination of the sexual activity which is necessary to detect matings in the system. It is therfore crucial that correct birthdays are set for your mice.

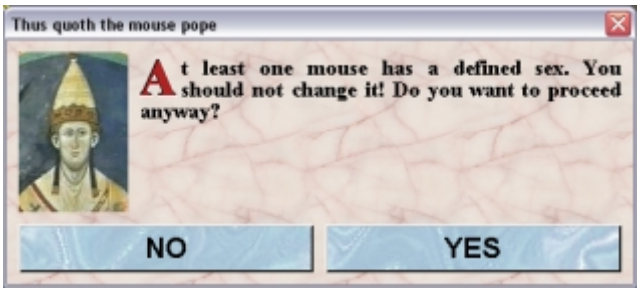
mark:
Mice can be tagged with a mark. This can be either the standard pointer or a letter from A to Z. This mark helps to quickly identify mice in mice tables. This button shows the mark of the selected mice. If no mark is set for any of the selected mice this button shows the label "**not set**". If more mice are selected and no common mark can be determined it shows "**multiple**". You set this value by clicking this button or by clicking in the "**M**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:



sex:
This button shows the sex of the selected mice. If the sex is undefined for any the selected mice this button shows the label "**not set**". If more mice are selected and no common sex can be determined it shows "**multiple**". You set this value by clicking this button or by clicking in the "**S**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:

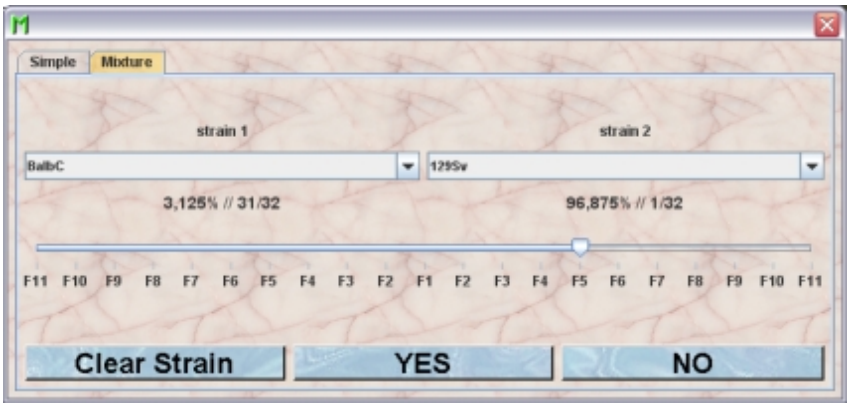


If the sex is already defined for at least one of the select mice and you are going to change it you will get this mouse pope alert:

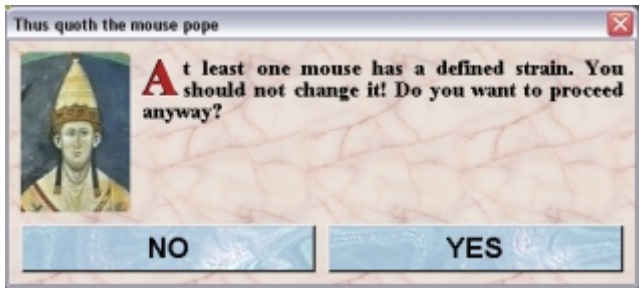


strain:
This button shows the **strains** of the selected mice. The strain defines the genetic background of the mice. A mouse can be have more than one strain if it is e. g. an anaimal from a backcross experiment. While producing a litter Mausoleum calculated the strain composition of the offspring. So, if the parents of a mouse have different strains the mosue will have a strain composition which reflects the mixture of the parents' strains.
If the strain is undefined for all selected mice this button shows the label "**not set**". If more mice are selected and no common strain can be determined it shows "**multiple**". You set this value by clicking this button or by clicking in the "**strain**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:

This dialog has two tabs. The tab "**Simple**" offers the possibility to select a strain from the set of avtive and visible strains. If you select a strain and confirm your selection by clicking "**YES**" the selected strain is set to 100% for all selected mice. You can also clear the strain information for the selected mice by clicking "**Clear strain**". If you want to specify a strain mixture for the selected mice you switch to the tab "**Mixture**":

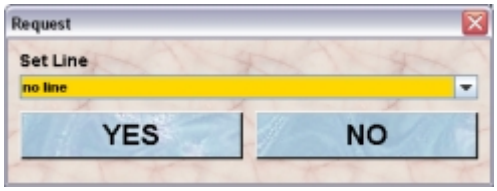


Here you can define the strain of the selected mice to be a mixture of two strains. This is useful when you are dealing with mice from a backcrossing experiment. In the two selection fields ("**strain 1**" and "**strain 2**") you select the strains and in the slider below these fields you set the ratio of mixture. The ticks of the slider are labeled with the generation markers in a backcross experiment. "**F1**" gives a 50/50 mixture "**F2**" a 75/25 mixture and so on.
If you want to change a defined strain of a mouse you will get this mouse pope alert:

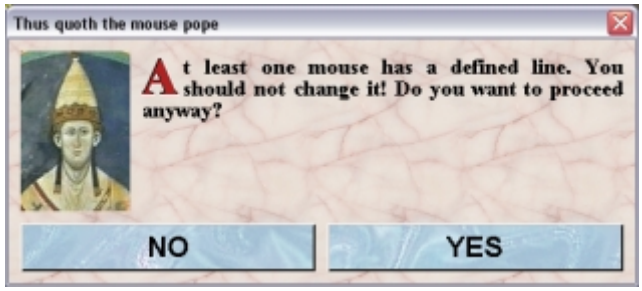


You can ignore this warning by clicking "**YES**".

line:
This button shows the defined **line** of the selected mice. Each mouse can have one only one defined line. While producing a litter Mausoleumdetermines the line of the offsprring. If the parents belong to different lines the line is determined by checking all active lines if there is a line which contains all alleles of all **loci** of the lines from the parents. If there is such a line this will be the line of the pups. If no such line can be found it depends on the role of the user what is happening. If it is a GURU a **line mixture** can be produced. If the user doesn't have enough privileges to define new lines the line of the pups remains undefined.
If the line is undefined for all selected mice this button shows the label "**not set**". If more mice are selected and no common line can be determined it shows "**multiple**". You set this value by clicking this button or by clicking in the "**line**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:



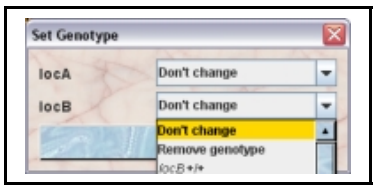
You can also delete the line information for the selected mice by selecting "**no line**" in the selection field of the dialog. If you do so of course the genotype is also removed. If you want to change a defined line of a mouse you will get this mouse pope alert:



You can ignore this warning by clicking "**YES**".

genotype:

The genotype can be defined from the alleles of the **loci** which are defined in the **line** of the mose. Therefore before defining the genotype of a mouse first the line has to be defined. This button shows the genotype of the selected mice. This button is inactive if the selected mice have no defined line or have different lines. It is also inactive if the line of the selected mice is the "**breeder**" line which has by definition only the wild-.type geontype "**wt**". Another situation in which this button is inactive is when you selected mice of different or undefined sex and the line contains a locus which is non autosomal. If the selected mice have a common line but different genotypes it has the label "**multiple**". You set this value by clicking this button or by clicking in the "**genotype**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:



In this dialog you can set the genotype for each locus of the line independently. Fir all loci you get a selection field where you can chosse from all combinations of the alleles which are contained in the line for the given locus. For the loci where you don't want to change the genotype information you select "**Don't change**" in the selection field.

tag:
Th eartag attribute discussed above is intended for id marking mice with metallic tags and is purely numeric The tag serves a similar purpose but is any combination of numbers and letters and could be used if mice are tagged by other means such as toeclipping, transponders or tattooing. It does not need to be unique within the set of actual mice of the group.
If the tag is undefined for all selected mice this button shows the label "**not set**". If more mice are selected and no common tag can be determined it shows "**multiple**". You set this value by clicking this button or by clicking in the "**tag**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:

If more than one mouse is selected all mice will get the same tag because there is no precise consecutive order defined for alphanumeric values.

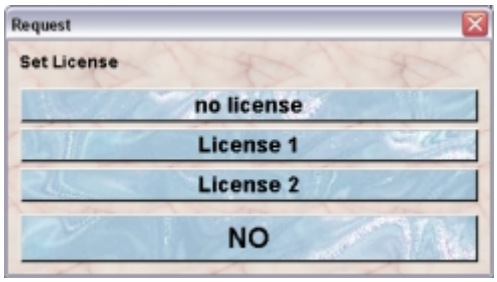
Maturity limit:
This button shows the defined maturity limit of the selected mice in days. You can set a default age when mice become sexually mature. Note: Placing a male and a female in the same cage will not make it a breeding cage unless both mice have reached sexual maturity. The default is six weeks or 42 days. It can be freely defined between 21 and 56 days (for details see: **Matings**). You will use this field only if all selected mice show an altered age of sexual maturity. The sexual maturity for a mouse is determined using this scheme:

- check the mouse. If a maturity limit ist specified for the mouse use it.
- check the line of the mouse If a maturity limit ist specified for the line use it.
- check the strains of the mouse If a maturity limit ist specified for one of the strains use it.

- use the default value of six weeks

If the maturity limit is undefined for all selected mice this button shows the label "**not set**". If more mice are selected and no common maturity limit can be determined it shows "**multiple**". You set this value by clicking this button or by clicking in the "**Maturity limit**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:

License:
This button shows the legal **license** the selected mice are counted for. If the license is undefined for all selected mice this button shows the label "**not set**". If more mice are selected and no common license can be determined it shows "**multiple**". You set the license by clicking this button or by clicking in the "**License**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:

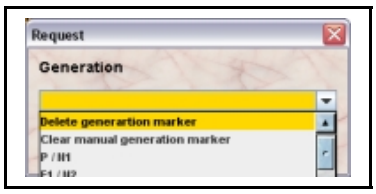


You have the choice between the actual license which are defined in your group. This choice will be presented as dropdown list or as buttons if less than 5 items are available.

Generation:
This button shows the defined generation marker of the selected mice. In Mausoleum you can define a generation marker for mice. It wil displayed as "**P**" for the parental generation and "**F1**" for the childs, "**F2**" for te grandparents and so on.
Of course the generation is passed to the offspring of a mouse. The general rule is simple:
pups of a "P" mouse have generation marker "F1"
pups of a "Fn" mouse have generation marker "F(n + 1)"
But problems arise due to the fact the mice have two parents. These might be not the most dramatic problems due the same fact in other species, but anyway. Now we can run into trouble if the generation markers of the parents are not identical. We encounter these cases:
both parents have the same generation marker: Fine. The rules from above apply.
the father has a defined generation marker the mother hasn't or vice versa: Fine. Mausoleum uses the single generation marker and the rules from above apply.
both parents have defined generation marker but they differ. Mausoleum now uses the "higher" marker ignoring the other and applies the rules from above. In this case you will see in the **fact sheet** of the pup an entry looking like this one which indiicates that the mother was "**F2**" father was "**P**" therefore the the mouse got the consecutive generation of the higher one "**F3**":

generation	**F3 (♀: F2 / ♂: P)**

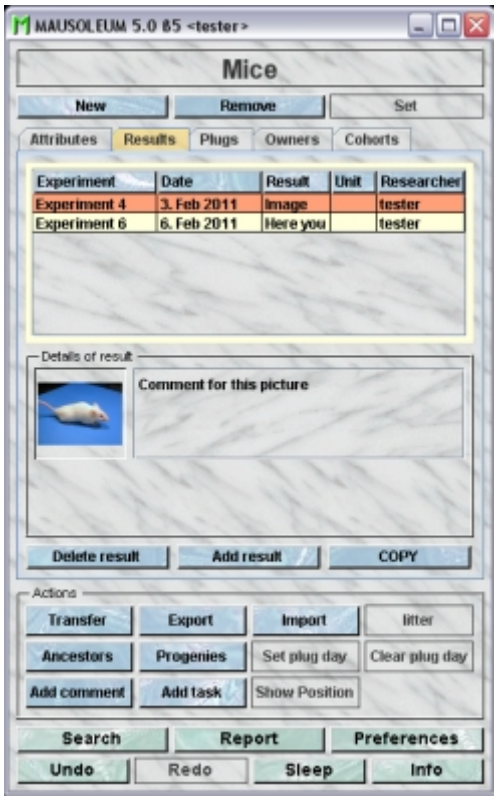
The automatically generated generation marker can be replaced by a manual override which can be set using this button.
If the generation marker is undefined for all selected mice this button shows the label "**not set**". If more mice are selected and no common generation marker can be determined it shows "**multiple**". You set this value by clicking this button or by clicking in the "**Generation (P/F)**" cell of a mouse table (if "**Edit in in tables**" is set in the **Preferences**) using this dialog:



If you select a generation marker for a mouse for which an automatically detemined generation marker was defined this will be regarded as manual override.
You can specify that the generation marker for the selected shall be deleted in a way that they won't bequeath the generation marker to their offspring any longer by selecting "**Delete generation marker**" in the selection field. As mentioned above you can manually override the generation marker inherited from the parents of the mouse. You can clear that manual override by selecting "**Clear manual generation marker**". If you do so the general rules again apply.
comments:
In this field you can type in comments to the respective mouse. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one mouse is selected. If you want to add a comment to more than one mouse use the "**Add comment**"-buttion in the "Actions" area of the inspector.

14.3.2The "Results" tab

It shows the experimental results entered for the selected mouse:



A detailed description about how to set experimental results and how they are presented in this tab can be found **here**.

14.3.3The "Plugs" tab

It shows the plugdates of the selected mouse:

Plug dates give an overview of mice involved in timed matings. This tab behaves a little bit different between males and females. All Plug dates for selected female mice are shown in the list. The list can be edited both by adding and removing plugdates. Males do not get plug dates, but the performance of a male can be viewed by clicking Plug report. A new window opens showing all mating opportunities with dates for successful plugging.

14.3.4The "Owners" tab

It shows the owners of the selected mice

It is possible and in fact advisable to define one or more owners for a mouse. Ownership means that only these users can modify the attributes of the particular mouse. The exceptions of this rule are GURUs and CARETAKERs who can modify each object of the group. Only GURUs, MASTERs, EXTERNALs and STUDENTs can own mice. The default privileges for the different user roles regarding mouse ownership and general mouse handling are:

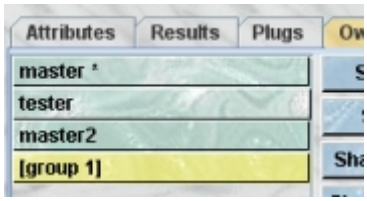
		GMASTER	STUDENT	NOVICE	CARETAKER	EXTERNAL
can be mouse owner	**X**	**X**	**X**			**X**
can see foreign mice	**X**	**X**	**X**	**X**	**X**	
can handle foreign mice	**X**				**X**	
can create new mice	**X**	**X**			**X**	

These default privileges can be modified or fine tuned for each user independently as described **here**.

Mice can also belong to an **owner group**. This is a group of users who can own groups and are treated like normal users in respect to mouse ownership. Whether or not a particular user owns a mouse is always determined on the fly. Mausoleum checks the three possibilities for a mouse ownership:

- The mouse has no defined owner. In this case all users of this group own this mouse (if this is possible for the given user)
- The user is one of the defined owners of this mouse
- The user is member of an owner group which is defined as an owner of this mouse

In the list on the left hand side of the "Owners" you see all the users who own the selected mice at the moment. Green tablets indicate that this user owns all the selected mice a yellow tablet indicates that this user owns only a subset of the selected mice. A little asterisk marks the primary owner of the selected mice in the example "**master ***". Owner groups which are defined owners of the selceted mice are shown in braces as in the shown exmpale "**(group 1)**".



If you own the selected mice or are the GURU of the group you can modiify the ownership of the selected mice by clicking one of the buittons on the right side of the "Owners"-tab. You have these options.

- **Share mice with all users**: This clears the ownership information of the selected mice and the mice belong to all users (GURU, MASTER or STUENT) of the group even if they are defined later on.
- **Share mice with nobody**: This defines you as being the only owner of the selected mice.
- **Share mice with specific user**: This will bring up a dialog in which you select the other user wiith whom you want to share selected mice. If the mouse belongs at the moment to all users you and the selected user will be the defined owners. If the selected mice already have defined users (including you) the selected user will be added to this list.
-

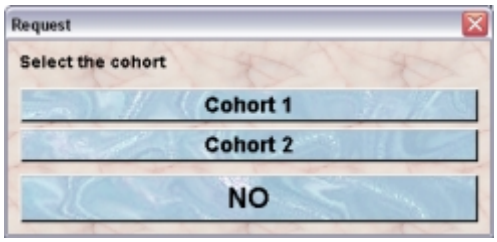
- **Share mice with specific group**: This action is very similar to the upper one except that in this case you select from a list of the defined **owner groups**. Mausoluem will not check if one of the defined is also member of the owner group.
- **Set owner**: This defines another user as being the only owner of the selected mice. You select the user from a list of possible users with the appropriate user roles.

- **Set owner group**: This defines a owner group as being the only owner of the selected mice. You will get a dialog where you select from a list of the defined active owner groups of the group.
- **Set primary owner**: The primary owner of the mouse is the one who is shown first on cage cards. The primary user can be chosen from the defined owners of the mice. Owner groups cannot be chosen as primary owner.

14.3.5The "Cohorts" tab

It shows the **cohorts** to which at least one of the selected mice belong to.

You can specify an additional cohort in which the selected mice should be included by clicking the "**Add cohort**"-button In the dialog the possible active cohorts are presented for selection. This choice will be presented as dropdown list or as buttons if less than 5 items are available.



Selecting the name of cohort will add the selected mice to the members of this cohort.
If you want to remove the selected mice from a specific cohort you select this cohort in the table and click the "**Remove cohort**"-button.

14.4 The actions

In the "Actions" area of the inspector you find several blue buttons which invoke various actions not directly connected to the attributes of the selected objects:

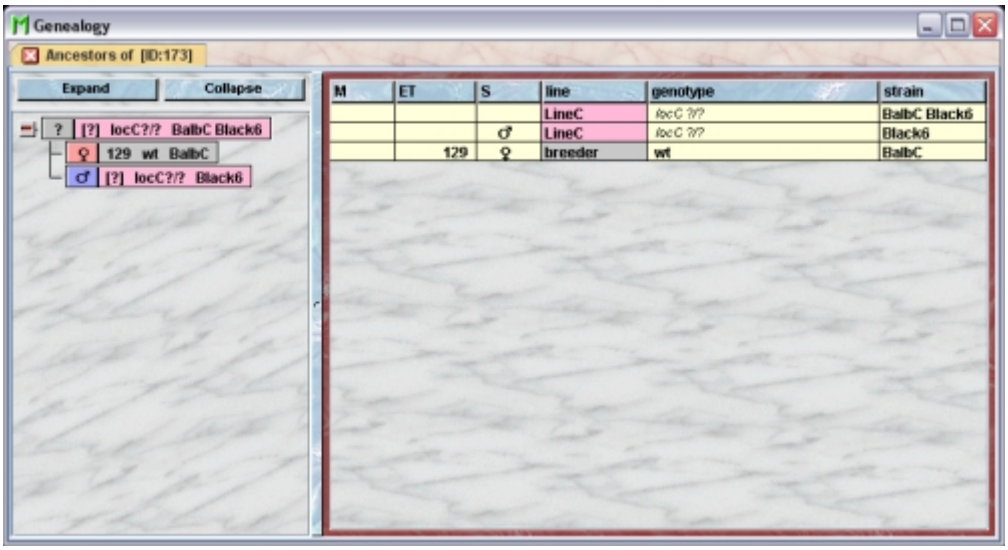
Transfer: The selected mice can be transferred to a cage in the selction field. This functions the same way as drag and drop in the rack window. You get a dialog to specify the target cage and the date of the transfer. Please be careful with the transfer date. Functions like determination of the father or calculation of mating efficiency strongly depend on the correct dates of mosue transfers. If you select "new Cage" in the selection field a new cage is created and placed in the transfer area.

Export: With this function you can export mice to other researchers. A detailed description of the export process can be found **here**.

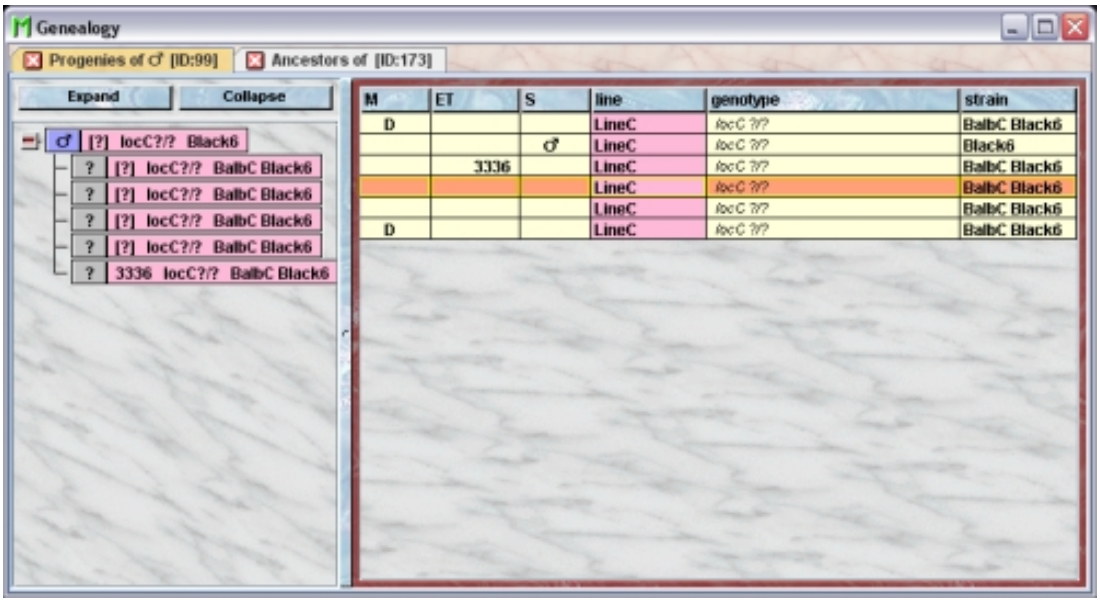
Import: If a user from another group has sent you mouse data via regular email you can import mice and their loci, lines and strains using this function. A detailed description can be found **here**.

Litter: If a female mouse is selected you can porduce a litter from that mouse using this button. Details are described **below**.

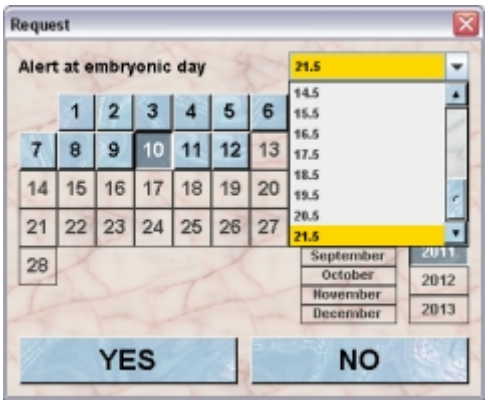
Ancestors: This gives you a pedigree chart for each selected mouse as separate tabs in a new window. You can expand or collapse individual nodes by clicking the "+" or "-"-symbols in the tree veiw on the left side. The mouse table on the right side shows the visible mice of the tree view. You can expand or collapse the whiole tree by clicking the "**Expand**"- or "**Collapse**"-button. There is one special thing to mention about the tree view. If Mausoleum detects that a mouse has been already included in the tree it does **not** repeat this part of the tree. The respective tree node is marked as "Proxy" indicating that you find the "real" entry somewhere else in the tree together with all the ancestors of this mouse.



Progenies:This gives you a tree view of all offspring from the selected mice as separate tabs in a new window. The user interface is the same as described for the Ancestors:

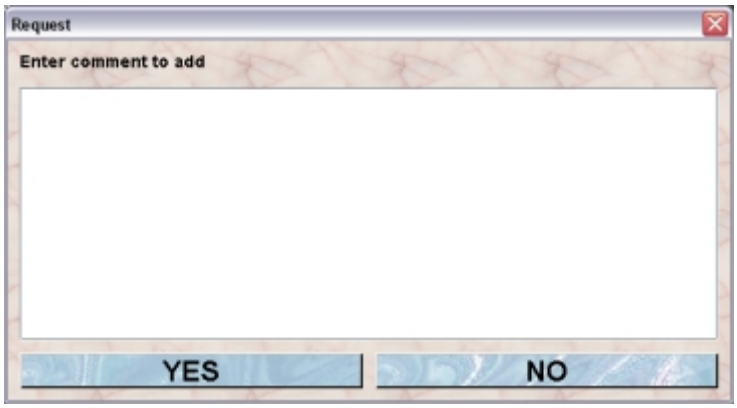


Set plug day: This opens a calendar where the plugdate of a selected group of females can be indicated. It is possible to activate an alert on a number of days after observation of the plug:



Clear plug date: Removes the plug date and inactivates the alert.

Add comment: is used for adding the same comment to one or several selected mice. If only one mouse is selected the comment can be written directly into the comment field in the Mouse Inspector. You type in the comment to add in the text area of this dialog and click the "**YES**"-button:



Add task: Adds the same task to the selected mice due on the date indicated in a dialog. In this dialog you specify the type of task to be performed. You can either select from the list of defined standard tasks or you select "**Other**" in this list and provide a description of the task to be done. It is possible to write much more than can fit into the small window. It is usually impractical to use this for long instructions though. Consider using the mail function combined with the Add task function. To see all tasks click the Tasks button in the object selection field of the inspector. You can select a favorite person to perfom the task. You can select from all those users who have the privileges to modify the attributes of all selected mice. You can set a time preference ("Morning", "Afternoon" etc.). In the calendar panel you specify the day when the task should be perfomed.

Show position: Opens the Racks view and flashes the cage where the selected mouse can be found.

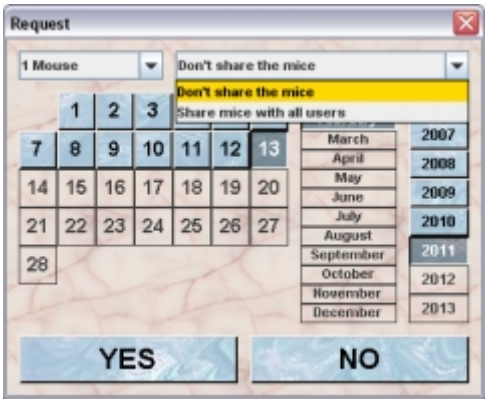
14.5 Creating new mice

There are several ways to add new mice to your database:

- Adding mice *de novo* without link to other objects from the database. You will use thiis way if you receive mice from a distributor.
- Adding litters from a female mouse.
- Importing mice which were sent to you from another researcher. A detailed description can be found **here**.

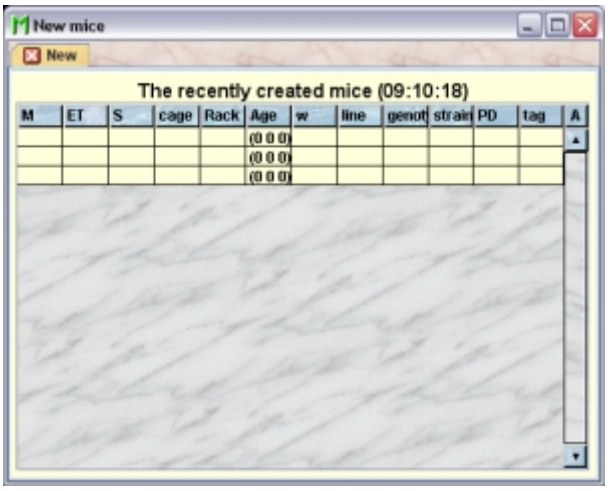
14.5.1 Adding mice *de novo*

Select "**Mice**" in the object selection field of the inspector and click on the "**New**"-button. You will get this dialog:



In the selection field in the upper left corner you define how many mice you are importing. There is a range of preselected numbers, but you also have the option to define any number. Also decide on whether these mice should be shared with all other users of the group or whether you should be the single owner these mice. A CARETAKER cannot own mice and therefore while importing mice will by default share the mice with all users, whereas all other users have the "**don't share the mice**" as a default.

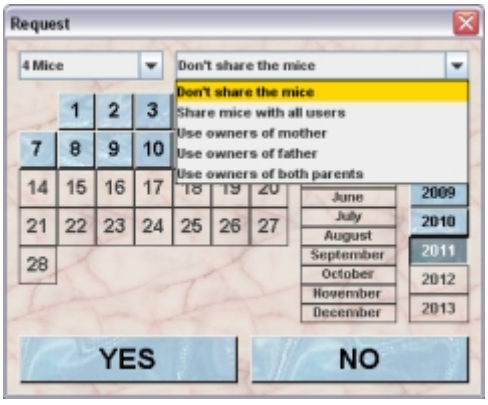
The date you specify in the calendar panel in the lower part of the dialog is **not** the brithday of the mice. This can be set later on. It is the date where you imported the mice into your system. So this should be usually set to date when you physically imported the mice in your mouse room.
The new mice are shown in a table with the title "**The recently created mice**" with a time stamp as tab in a separate window:



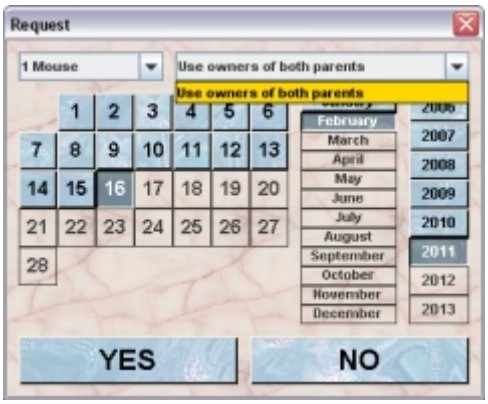
In this mouse table you can now start defining the attributes of the new mice.

14.5.2Adding litters

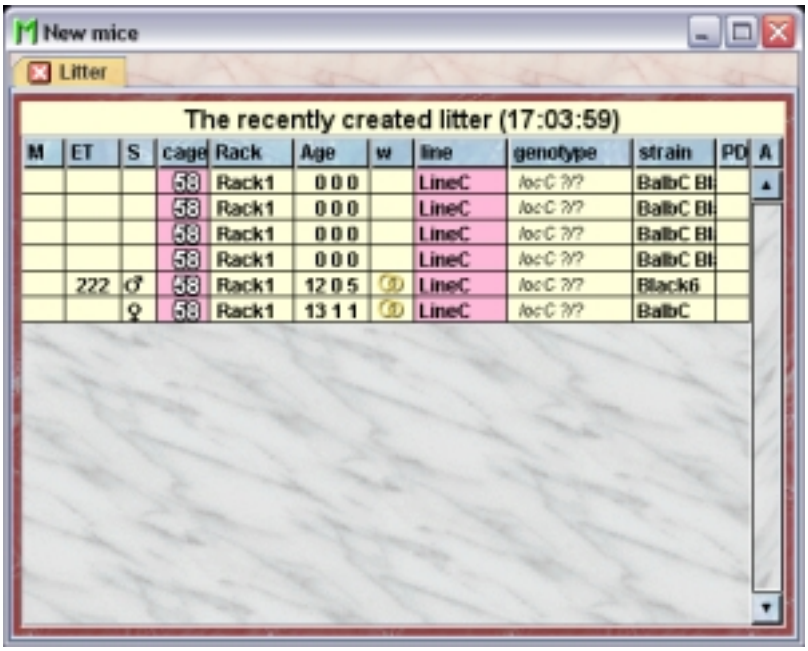
Creating a litter is very simple. You Select the female mouse having dropped a litter in any of the mouse table where it is listed and press the "**litter**"-button in the mouse inspector. In the dialog you have to specify number, ownership details and the date of birth:



In the selection field in the upper left corner you define how many mice you are importing. There is a range of preselected numbers, but you also have the option to define any number. Also decide on whether these mice should be shared with all other users of the group or whether you should be the single owner these mice. In this dialog you can also specify to pass the ownership of mother or father or both to the pups. A CARETAKER can only select "**Use owners from both parents**":

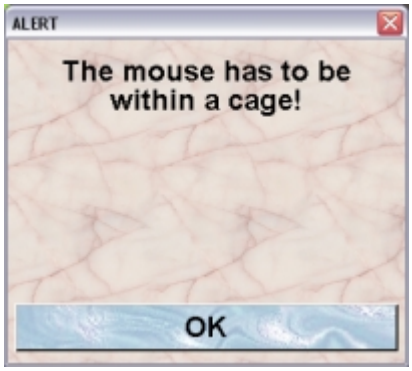


After clicking "**YES**" the new mice are created using the information provided and shown in a table with the title "**The recently created litter**" with a time stamp as tab in a separate window:



These attributes are automatically set:

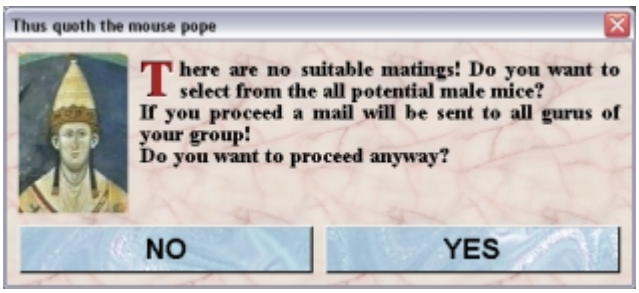
- The parents are set as attribute of all the offspring mice
- The pups are added to the list of kids for the mother and father
- The pups are placed in the same cage as the mother is located. If the mother is not put in a cage the litter cannot be produced and you will get this alert:



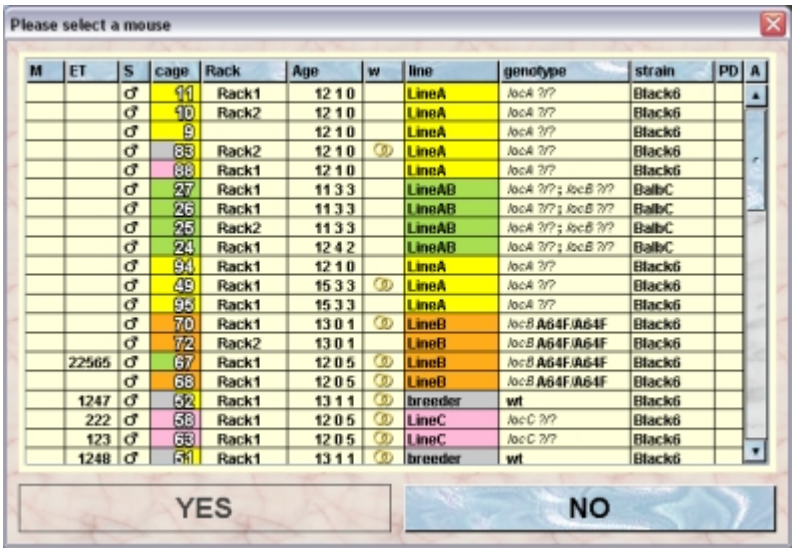
- The birthday is set to the date entered in the calendar field
- The **strain** of the pups is used from both parents if they are the same or is calculated as a mixture of the parents' strains
- If the line of both parents is the same this is set for the offspring. If they differ it depends on the type of lines involved. Is one of the breeder line the line from the other parent is used. Otherwise Mausoleum tries to find an active line which contains all loci and their alleles of the parents' lines. If no such line can be found a GURU can create a **line mixture** during the process of defining the litter. If the user hasn't got the approriate privileges to create a new line the line is left blank.
- If a line could be set for the offspring and automatic genotyping is enabled Mausoleum will set the genotype of offspring if its unequivocal. E. g. If both parents are +/+ for a given locus then the pup will also be +/+ for this locus. If the parents are +/+ and -/-for a given locus then the pup wil have the automatically generated genotype +/-. Automatic genotyping can be switched on or off generally in the **Preferences** or for each individual **locus** or**line**.
- If generation markers were set for at least one of the parents the corressponding generation marker is set for the pups as described **here**.
- If the parents are members of a **cohort** which is defined as inheritable each mouse of the offspring will become member of this cohort.

As you can see in the this listing it is very important for Mausoleum to know both parents in order to calculate certain attributes of the pups. But as known from other species determining the father can be a complicated task. The rules in Mausoleum are as follows:

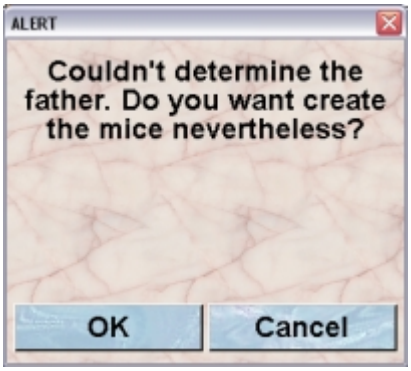
1. Mausoleum first calculates the date of conception. The begin of the "crucial phase" is assumed to be 28 days before delivery and ends 16 days before delivery. Mausoleum checks for this period for male mice which were sexually mature shared the cage with the mother. If we find a unique candidate this one is chosen.
2. To take into account that there might be a little error in the dates of the cage visits Mausoleum extends day by day for additional 6 days the begin of the "crucial phase". If there is a unique candidate this one is chosen.
3. If there are more possible candidates let the user decide which one in a dialog with a table showing the possible candidates (see below rule 5).
4. If we find no candidate the user is informed about this fact by a mouse pope alert:



   If you proceed by clicking "YES" you can chose from mature actual cage mate(s) in a dialog with a table showing the possible candidates (see below rule 5). This rule was included because there could be an error in the date of the mouse transfer or the user imported a couple which was already in a mating in the group from which it was exported.
5. If there is still no candidate the user can choose from all actual male mice which were mature at the date of calculated conception using this dialog:



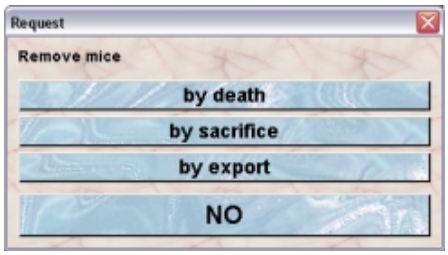
6. If also there was no possible father (or the user didn't choose one) you will get this dialog:



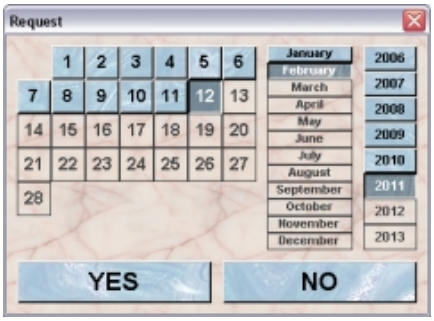
Options 2, 3 and 4 are only possible with certain privileges which are available only for GURUs, MASTERs (3, 4, 5) or CARETAKERs (only 3)

14.6 Removing mice

You will remove mice from the database if they either died or left your mouse colony by export. If you exported mice by exporting their data to another lab as described **here**, the mice are automatically marked as exported and removed from the set of the active mice and you do not need to remove them manually.
Select "Mice" in the object selection field of the inspector, select the mice you want to remove and click on the "**Remove**"-button. First you will get a dialog in which you specify the mode of removal:



Then you have to specify the date of removal using this calendar dialog:



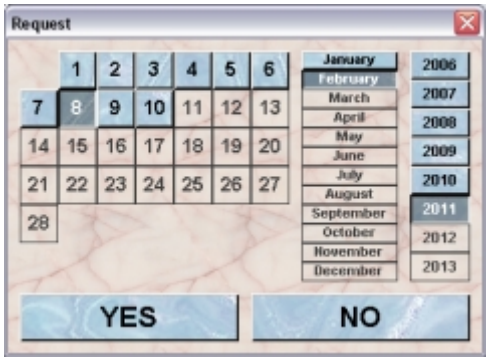
Clicking "**Yes**" will remove the mice from the set of the actual mice and the cage and will set the chosen end mode. You find the removed mice in the "**Removed mice**"-tab of the **mouse window.** If a **license** was defined for the removed mice they will be registered by their death mode as shown in this part of a **fact sheet** from a license where you can see the numbers of died, sacrificed and exported mice listed:

Fact sheet for license License 1

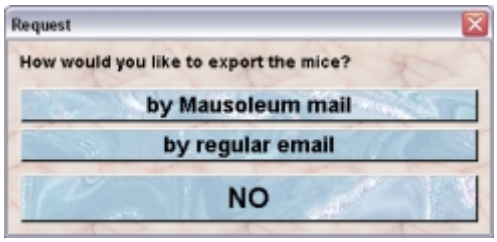
system ID	1
start	5. Feb 2011
holder	John Doe
Begin of validity	1. Jan 2010
expiry date	31. Aug 2013
maximum mouse number	1240
mice used	13
mice remaining	1227
died	0
sacrificed	3
exported	1
users	master
color	

14.7 Exporting mice

You can export mice to other researchers. It is mportant to note that alongside the mice with their attributes also the loci, lines and strains of these mice are sent to the recipient. On the recipients side Mausoluem determines whether it is necessary to import also the loci, lines and strains based on the properties of these objects. If so the loci, lines and strains are introduced to the recipient's group data.
Transmitting the data can be done using the Mausoleum internal mail function. Using this way the export is restricted to recipients who are member of a group of your Mausoleum installation. Another option is to send the data in an encrypted way by regular email. This gives you the opportunity to exchange your mouse data with other Mausoleum users around the globe.
Please keep in mind that the mice which you export will be removed from set of active mice like if you would have marked them as dead.
First you have to select the mice you want to export in a mouse table. Then you click the "**Export**"-button in the mouse inspector. A dialog appears to specify the date of the export:

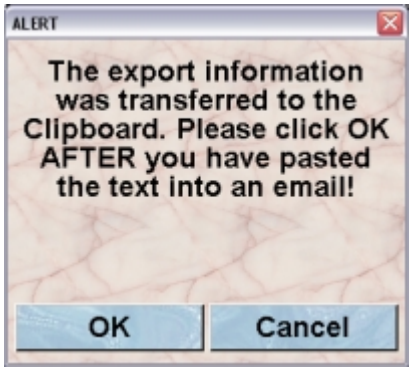


Then you havte to decide whether you want to use the Mausoleum internal mail or the regular email:



If you decide to export your mice using the **Mausoleum mail** the mail dialog appears where you specify the recipients, the subject and the text of your mail. Clicking "**Yes**" wil start the export.

If you decided to use the **regular email** a information dialog appears which informs you that all bnecessary data was transferred to the clipboard and is ready for transfer to a regular email.



Please make sure that you pasted the encrypted representation of your mice to an email or to a text editor where you can use it later before you clicck "**OK**" in this dialog.
The contents of the clipboard which you can copy to an email might look like this. Please make sure that the whole contents is pasted in your email.


```
2_mice_/_1_line_/_1_locus_/_1_strain
-----------------------------------------------
START_OF_EXTRACT
PEkgY2w9bG8gSWc9MnwzfDEyNjg3NDU0MjV8IExPYT1TW0BLdy
0tfExRLS18Umt3LXxRVFkwUmctLSBMT2U9U0BJQS0tIExPbj1T
QGJHOWpRZy0tIExPYXU9QkAxIExPdz1TQEt3LS0gLz4KPEkgY2
w9bCBJZz0zfDJ8MTI20Dc0NTk1OHwgTGM9Q0xAMjU1fDE3Mnwy
NyBMbj1TQFRHbHVaVUktIExsPUxBQVtAMiRLdy0tJExRLS0kUV
RZMFJnLS0kUmt3LSBMaD1CQDEgLz4KPEkgY2w9c3QgSWc9MXw4
fDEyNjg3NDYwMzZ8IFNUbj1TQFFtRnNZa00tIC8+CjxJIGNsPW
0gSWc9MTV80XwxMjY4NzQ2MTIxfCBNeD1JQDIgTXM9SU9bQDgk
MSQxLjAgTXNtPU1AMyBNYj1EVEAxMjY1NjM2MTM2IE1sPUxAMy
BNZmw9Q0BEIE1nPUxBQVtAMiRMUS0tJFJrdy0gLz4KPEkgY2w9
bSBJZz0xNHw5fDEyNjg3NDYxMjF8IE14PU1AMiBNcz1JT1tAOC
QxJDEuMCBNc209SUAzIE1iPURUQDEyNjI2MTIxNDMgTWw9TEAz
IE1mbD1DQEQgTWc9TEFBW0AyJExRLS0kUmt3LSAvPgo-
END_OF_EXTRACT
-----------------------------------------------
```

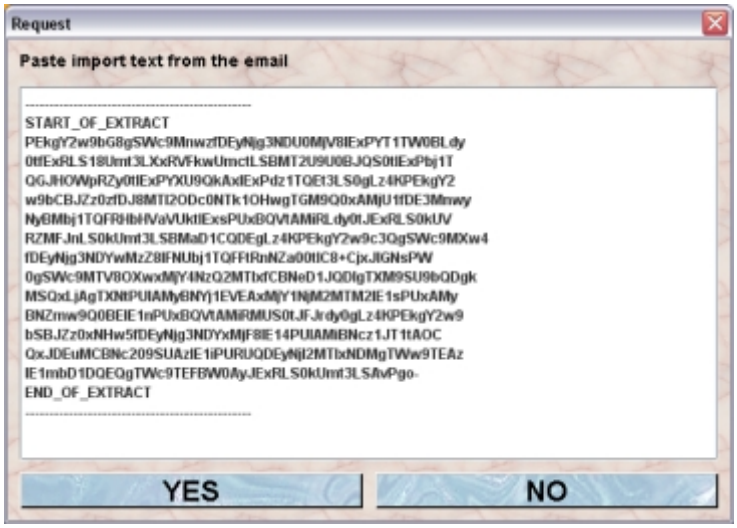
The recipient can use this encrypted text to import the mice with all the necessary data to his or her group.

14.8 Importing mice

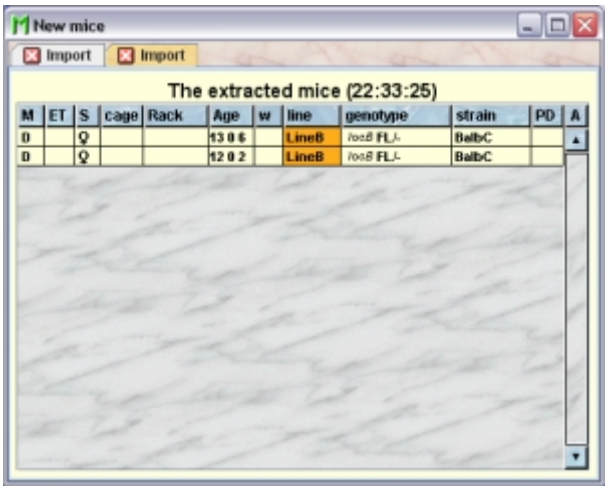
Mice can be transferred between groups either via the Mausoleum internal mail or using regular email. The import of mice via the Mausoleum mail is described here.
In this chapter we will focus on the other possibility of mouse exchange using regular email. In order to import the data the email sent to you has to contain a text with the encrypted data. This text fragment will look like this:


```
2_mice_/_1_line_/_1_locus_/_1_strain
-----------------------------------------------
START_OF_EXTRACT
PEkgY2w9bG8gSWc9MnwzfDEyNjg3NDU0MjV8IExPYT1TW0BLdy
0tfExRLS18Umt3LXxRVFkwUmctLSBMT2U9U0BJQS0tIExPbj1T
QGJHOWpRZy0tIExPYXU9QkAxIExPdz1TQEt3LS0gLz4KPEkgY2
w9bCBJZz0zfDJ8MTI2ODc0NTk1OHwgTGM9Q0xAMjU1fDE3Mnwy
NyBMbj1TQFRHbHVaVUktIExsPUxBQVtAMiRLdy0tJExRLS0kUV
RZMFJnLS0kUmt3LSBMaD1CQDEgLz4KPEkgY2w9c3QgSWc9MXw4
fDEyNjg3NDYwMzZ8IFNUbj1TQFFtRnNZa00tIC8+CjxJIGNsPW
0gSWc9MTV8OXwxMjY4NzQ2MTIxfCBNeD1JQDIgTXM9SU9bQDgk
MSQxLjAgTXNtPUlAMyBNYj1EVEAxMjY1NjM2MTM2IE1sPUxAMy
BNZmw9Q0BEIE1nPUxBQVtAMiRMUS0tJFJrdy0gLz4KPEkgY2w9
bSBJZz0xNHw5fDEyNjg3NDYxMjF8IE14PUlAMiBNcz1JT1tAOC
QxJDEuMCBNc209SUAzIE1iPURUQDEyNjI2MTIxNDMgTWw9TEAz
IE1mbD1DQEQgTWc9TEFBW0AyJExRLS0kUmt3LSAvPgo-
END_OF_EXTRACT
-----------------------------------------------
```

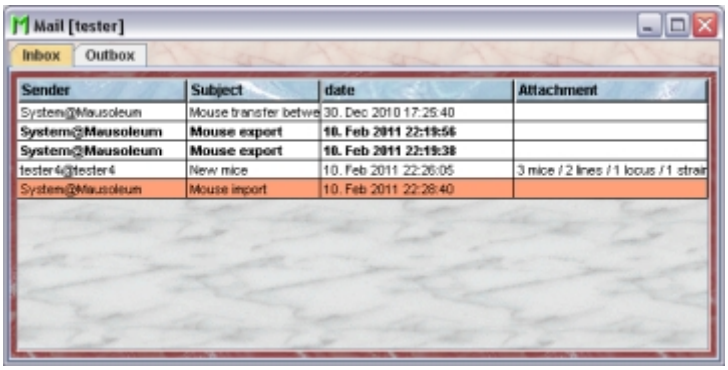

If you found a text fragment similar to the one shown above you copy it to the clipboard. Make sure that the whole encrypted part from "**START_OF_EXTRACT**" to "**END_OF_EXTRACT**" is contained in your selection. You click now (after selecting "**Mice**" in the object selection field of the inspector) the blue "**Import**"-button in the inspector. In the dialog you just paste in the copied text as shown here:



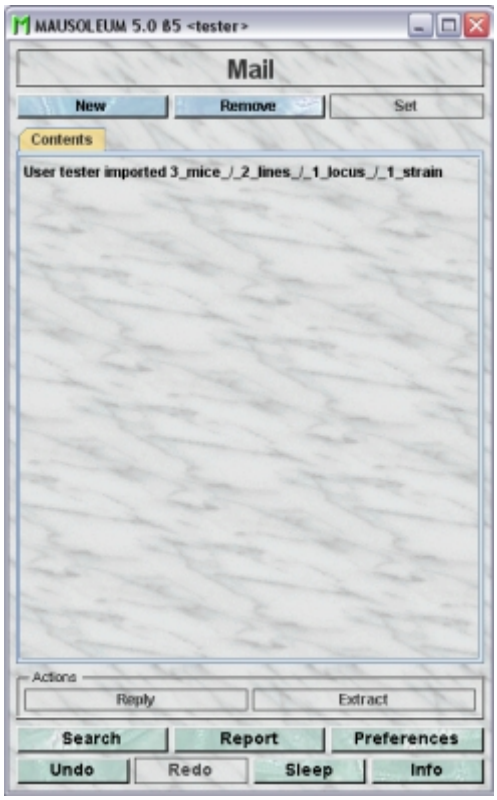
After clicking "YES" Mausoleum tries to decipher the pasted text fragment and if possible will import all the objects (mice, loci, lines and strains). If the extraction was sucessful a window is shown which contains a table with the extracted mice.



The GURUs of the group will get a notification email from the system:



The contents of this email is the information that a specific user has imported a certain number of objects into the group's database.



14.9 Experimental Results

14.9.1 In brief

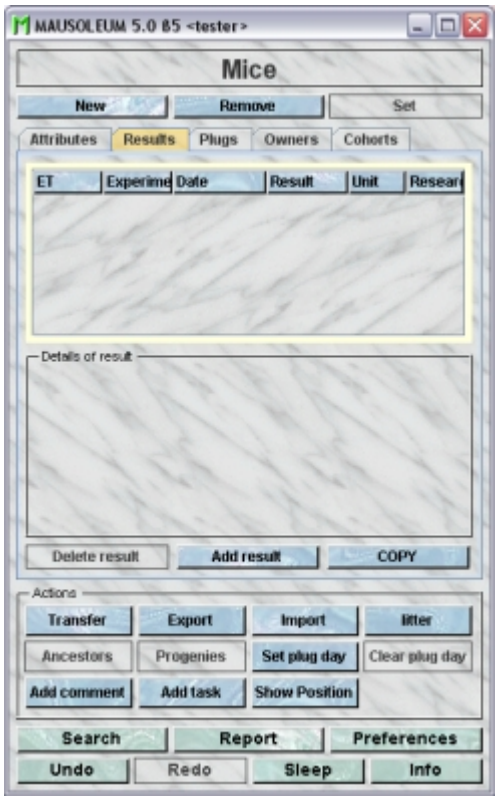
You can use Mausoleum also to store experimental results for your mice. Of course you can also store such information in the comment field of mice. But that leads to an accumulation of unreadable and unstructured data which can hardly be found later. To avoid such an accumulation of unstrucured result data experimental results ared stored in Mausoleum as association with the prevously defined experiments. For each experiment the type of results you expect are defined. These types are available:

- **Yes/No**: This type of experiment might be used for simple yes/no observations. Some people like to use this type of experiment to store a special treatment of the mice.
- **Integer number**: Integer numbers are expected for experiments where something is counted or a attribute of a treatment is stored.
- **Floating point number**: Here you can enter arbitrary numbers. A simple example for such an experiment is weihing of mice.
- **Choice**: In such experiments the user can select from a given set of possible results. An example could be the fur color.
- **Free**: For experiments defined as "Free" anything can be typed in as a result. This of course gives a maximum of freedeom but makes it really difficult to handle the results later on. You should restrict this type to experiments where really noen of the other types is applicable.
- **Image**: This type wil ask for images as a result.
- **Location**: A very special type of experiment. Possible result are GPS-coordinates. It was introduced to store the information where wild living animals were catched. Most labs won't use this type.

After you have defined experiments you can enter experimental results for your mice in the mouse inspector.

14.9.2 The result table

You find the results for the mice by clicking "**Mice**" in the object selection filed of the inspector and selecting the "**Results**"-tab therein.



You see on top a result table which adapts to the results of the selected mice. Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the results should be shown in this table. These attributes are available for the result table:

Column header	Description	Sortable	Filterable	Colorable
Date	Date of the result	X		
ET	Eartag	X		
Experiment	Name of the experiment	X	X	
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Researcher	The name of the person who performed the experiment	X	X	
Result	The result	X		
Unit	The unit	X		
end	The end date of the object	X		
mouse ID	The system ID of the mouse	X		
start	The start date of the object	X		

14.9.3Entering results

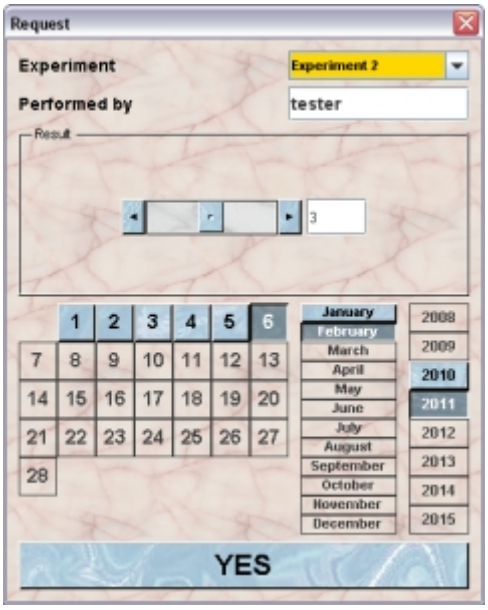
When mice are selected in a mouse table you can enter new result data in the "**Results**"-tab of the mouse inspector by clicking the "**Add result**"-button in this tab. You will get a diaolg where you enter the data of your experimental result. First you have to specify for which experiment you enter an experimental result. You do this by selecting the experiment in the selection fieled "**Experiment**".You also enter the name of the person who performed the experiment in the text field below the selection field. The result is entered in the area in the middle. In the lower part you select the date when this experiment was performed.
Depending on the type of result you will get different input elements for the input of your experimental result.

Entering a result for a "Yes/No" experiment

You will have a simple selection field where you can choose "**Yes**" or "**No**".

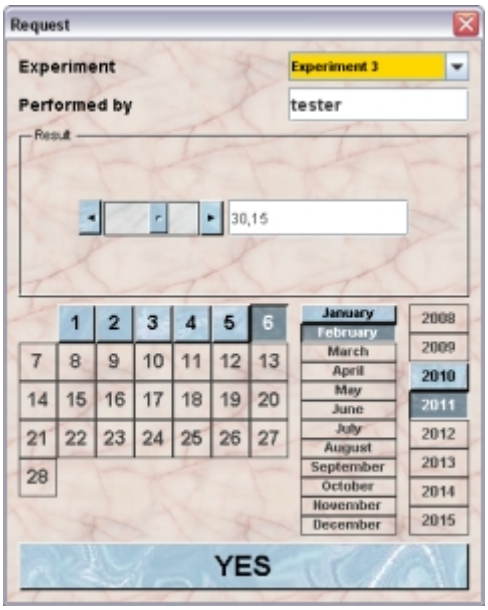
Entering a result for a "Integer number" experiment

You can input the integer number using the slider or the input field to the right.



Entering a result for a "Floating point number" experiment

You can input the floating point number using the slider or the input field to the right.



Entering a result for a "Image" experiment

In order to import an image as an experimental result you have to click the button "Define image". The system file chooser will appear where you have to specify the location of the image file. Allowed file types are: ".gif", ".jpg", ".jpe", ".jpeg" and ".png". You will see the thumbnail of the image in the littel field above the button. In the text area at the right side of the image you can type in a desctiption of the image.

Entering a result for a "Choice" experiment

You specify the result by selecting in the selection field one of the predefined potential results.

Entering a result for a "Free" experiment

In this case you can type in the text field whatever the result may describe best.

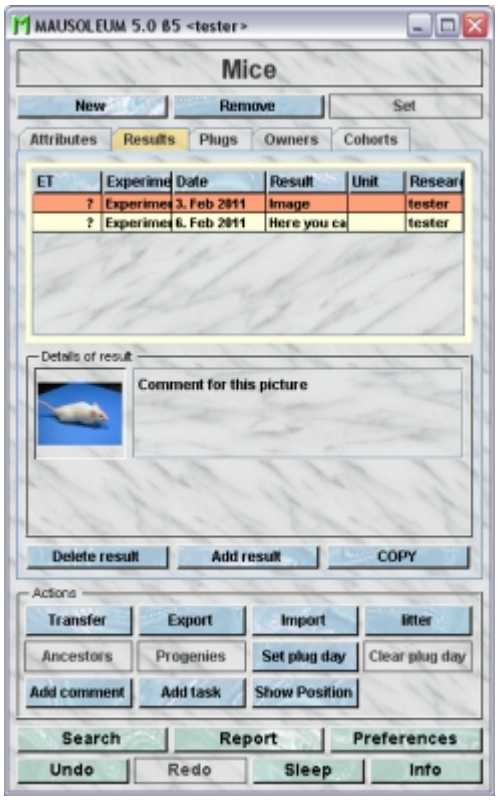
Entering a result for a "Location" experiment

For sch an experiment you have to specify the GPS coordinates of the location for the N/S and W/E direction.

14.9.4Presentation of results

in the table on top of the "Results"-tab of the mouse inspector you see all the results which are stored for the selected mice. After selecting one result in this table you see in the field below this table the details of the selected result. As example we see the details area for a result of a "Free" experiment for which the user can type in free text:

As a second example we see the details area for a result of an "Image" experiment:



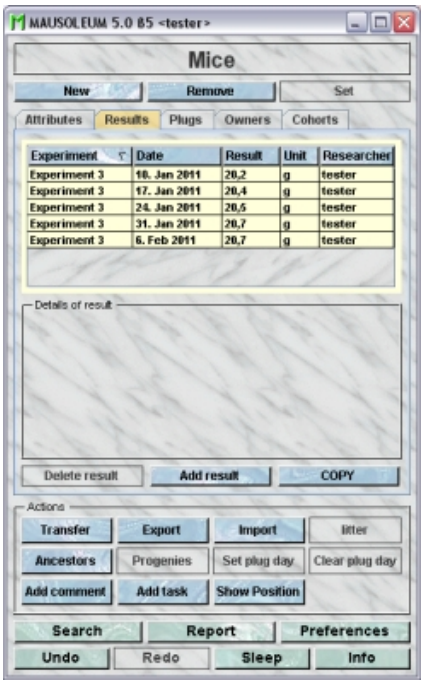
In the case of results of an "Image" experiment you see the thumbnail and the description. By double clicking the thumbnail you will get the full size image in a separate window.

14.9.5Deleting experimental results

You can delete experimental results by first selecting the mouse in a mouse table and then selecting the results in the result table of the "Results"-tab of the mous inspector. Clicking the "**Delete result**"-button will delete the select result immediately.

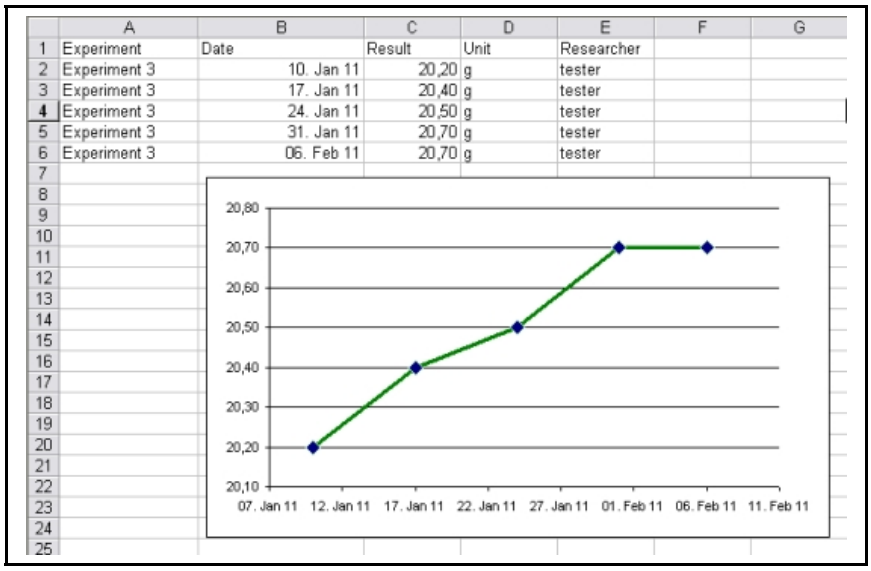
14.9.6Exporting experimental results

It is possible to export your experimental results to other programs for further analysis. Lets assume you want to create a diagram for results where you weighed a mouse on several dates. If you select this mouse in a mouse table the table in the "Results"-tab of the mouse inspector might look like this:



You can now export the table with the experimental results to the clipboard and import it in other programs by clicking the "**COPY**"-button. If you select this button, a dialog opens asking for the details of the copy procedure:

You can either copy the complete displayed contents of the table or only those lines which are selected at the moment. You can also copy the format of the table cells. But it depends on the receiving program whether this can be imported. After clicking "**Copy**" the contents is transferred to the clipboard and can be pasted in other applications (e. g. MS Excel). After pasting the data in the other program you can analyze data further or in our case produce a little diagram with the results of our time series of body weight figures:



	A	B	C	D	E	F	G
1	Experiment	Date	Result	Unit	Researcher		
2	Experiment 3	10. Jan 11	20,20	g	tester		
3	Experiment 3	17. Jan 11	20,40	g	tester		
4	Experiment 3	24. Jan 11	20,50	g	tester		
5	Experiment 3	31. Jan 11	20,70	g	tester		
6	Experiment 3	06. Feb 11	20,70	g	tester		

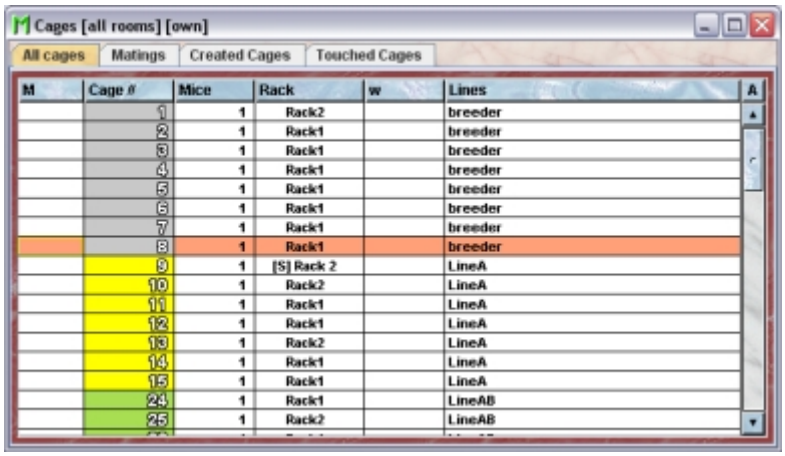
15 Cages

15.1 In brief

Cages in Mausoleum are the first level containers of mice. Every visist of mice in a cage has a precise start and end date which has to be entered by the user everytime mice are moved from one cage to the other. It is very important that you are extremely careful when setting these dates because these dates are also used for determination of the father of a litter or whether weaning of pups is necessary.
Cages can be put at defined position in racks. There are two types of cages in Mausoleum: single and double cages. A single cage contains one compartment, whereas a double cage contains two compartments which are physically separated. Regardless of the cage type a cage always takes exactly one spot in a rack.
The ownership of cages is completely inherited from the mice therein. This means that every user who owns mice in the cage is allowed to manipulated and move the respective cage. Other users cannot alter the attributes or position of the cage. The two exceptions from this rule are GURUs which can of course modify all objects in the group and CARETAKERs which are allowed to touch but cannot own mice or cages.

15.2 The cage window

After clicking "**Cages**" in the object selection area you will get the cage window.



This window contains different tabs with specialized cage tables:

- **All cages**: This table holds the table with all the active cages of the group.
- **Matings**: Here you find a table with all matings cages of the group
- **Created cages**: All cages created in the current client session are collected in this table
- **Touched cages**: All cages that were somehow modifed by actions performed in the current session are collected in this table

15.3 Cage tables

Using the command "Arrange columns" from the context menu (right mouse click in the table) you can specify which attributes of the cages should be shown in this table. These attributes are available for a cage table:

Column header	Description	Sortable	Filterable	Colorable
Cage #	The cagenumber	X		X
Foreign key	Foreign ID from other system	X		
GTS	The genotypes of the mice	X		
Group	Group name	X	X	
ID	The technical ID	X		
Lines	The lines of the mice	X	X	X
M	Mark	X	X	
Mice	The number of mice contained in the cage	X		X
Rack	The rack name	X	X	X
Strains	The strains of the mice	X	X	X
Unisex	Indicates whether only mice of one sex are in the cage	X	X	
comment	The comment	X		
end	The end date of the object	X		
father	Indicates whether father and offspring is present in cage	X	X	
mother	Indicates whether motther and offspring is present in cage	X	X	
start	The start date of the object	X		
tag	Alphanumeric Tag	X		
visits	The number of mice which were in this cage	X		
w	Indicator for matings	X	X	X

In the cage tables you can specify whether you want to see all objects of the group or only the objects you own. To switch between these display modes you use the little "**A**" button in top right corner of the table:

If this button is active (pressed) you will see all objects of the group. Your own objects are shown in black whereas objects owned by other users are shown with a blue font color.

15.4 The cage inspector

The cage inspector is active as soon as a cage table becomes the active table. It will adopt to the attributes of the selected cage and lets the user modify the attributes if the user has sufficient privileges to do so. The cage inspector has two tabs

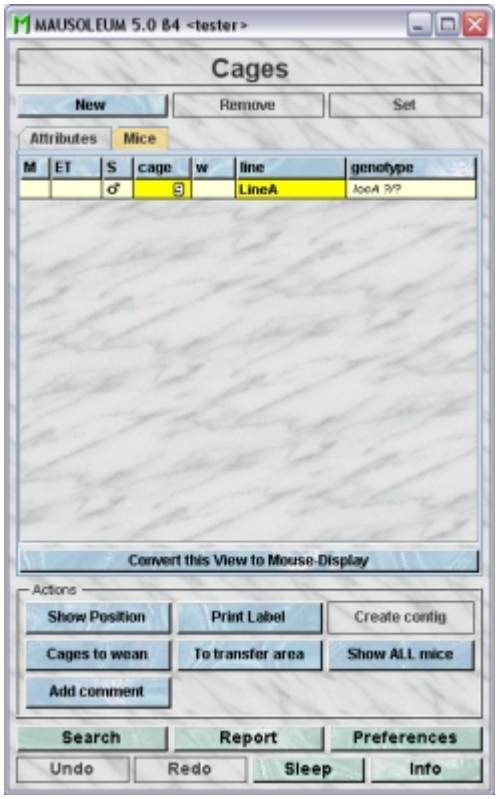
15.4.1 The "Attributes" tab

It shows the attributes of the cage:

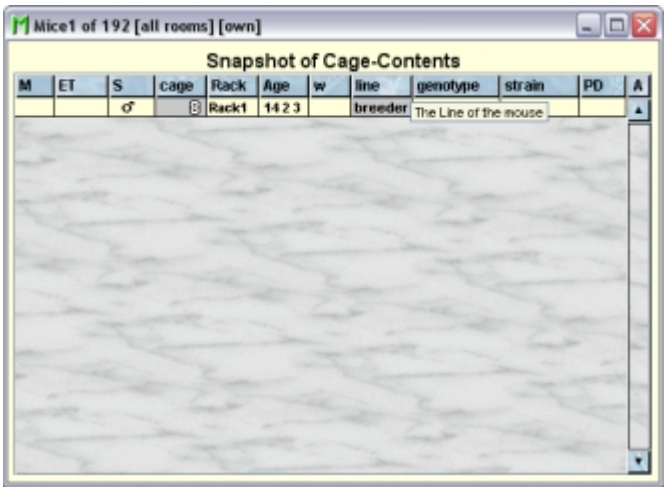
- **Mark**: Cages can be tagged with a mark. This can be either the standard pointer or a letter from A to Z. This mark helps to quickly identify cages in cage tables.
- **Cage#**: Each cage gets a number from the system when it is created which is not identical to the technical system ID. Mausoleum tries to give as small numbers as possible. So if you create a new cage Mausoleum looks for the smallest number availble. You can alter this number but you should chosse a number which is not already used by another cage.
- **Tag**: This is an arbitrary alphanumeric tag which dan be displayed in cage tables
- **License**: Here you can type in an arbitrary license key for the cage. This license key is not connected to the license which is connected to mice. It is just a text field.
- **Comments**: In this field you can type in comments to the respective cage. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one cage is selected. If you want to add a comment to more than one cage use the "**Add comment**"-buttion in the "Actions" area of the inspector.

15.4.2 The "Mice" tab

In this tab you see a table with the mice which are contained in the selected cages.



Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a snapshot of the cage contents will open:



15.5 The actions

In the "Actions" area of the inspector you find several blue buttons which invoke various actions not directly connected to the attributes of the selected objects:

- **Show position** opens the rack window and flashes the position of the selected cage

- **Print label** prints a cage card according to one of the predefined layouts.
- **Create contig** changes the number of the selected cages to the lowest consecutive number series available.
- **Cages to wean** opens a list of all cages which contain offspring more than three weeks old and their parents
- **To transfer area** move the selected cages to the transfer area. The button works the same way as the drag and drop feature in the rackwindow.
- **Show all mice** opens a table with all mice that have ever visited the selected cages.
- **Add comment** lets you add a comment to one or more cages at once. In addition you will be asked whether the comment you typed in should also be appended to all the mice which are in the selected cages.

15.6 Adding cages

New cages can be added by selecting Cages and then clicking the "**New**" button. You will be asked if you want to Create a single cage or a double cage. A single cage contains one compartment, whereas a double cage contains two compartments which are physically separated. Regardless of the cage type a cage always takes exactly one spot in a rack. Both compartments will have the same cage number followed by the letter L (for left) or R (for right).
You will also be asked on which date the cage was set up. This way you can add cages that were not properly recorded earlier.
A new single cage is also created by dropping mice onto an empty place in the rack. Double cages cannot be created using the drag and drop of mice in the rack window.

16 Matings

16.1 In brief

In Mausoleum there is no special procedure to set up a nating, Combining a male with one or more females in a cage automatically defines this cage as a mating cage as soon as the mice have reached the predefined sexual maturity. For that reason matings aren't very special objects in Mausoleum. They are determined on the fly and represent a subset of cages with potentially sexual active mice.
In exactly the same manner you do not need to care about ending a mating. If the potential mating partners are separated Masuoelum automatically regards thsi mating as finished and it will no longer be displayed in the mating table.
The ownership of matings is completely inherited from the mice taking part. This means that every user who owns mice in this mating is regarded as owner of the mating.

16.1.1 The mating table

After clicking "**Matings**" in the object selection area of the Mausoleum inspector you will get the **cage window** with the "Matings"-tab selected showing the table of all active mating cages. Using the command "Arrange columns" from the context menu (right mouse click in the table) you can specify which attributes of the matings should be shown in this table. These attributes are available for a mating table:

Column header	Description	Sortable	Filterable	Colorable
Foreign key	Foreign ID from other system	X		
GTS	The genotypes of the mice	X		
Group	Group name	X	X	
ID	The technical ID	X		
Lines	The lines of the mice	X	X	X
Mice	The number of mice participating	X	X	X
Pups	The number of pups in the cage	X	X	
Strains	The strains of the mice	X	X	X
cage	The cage of the mating	X		X
comment	The comment	X		
end	The end date of the object	X		
start	The start date of the object	X		

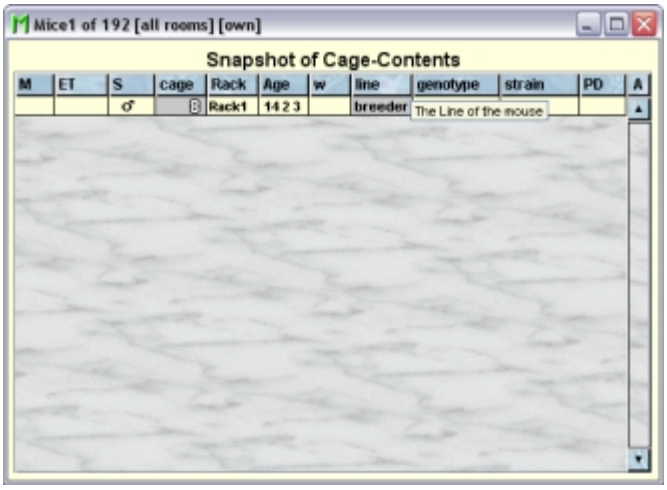
In the mating table you can specify whether you want to see all objects of the group or only the objects you own. To switch between these display modes you use the little "**A**" button in top right corner of the table:

If this button is active (pressed) you will see all objects of the group. Your own objects are shown in black whereas objects owned by other users are shown with a blue font color.

16.2 The Mating Inspector

As mentioned above there are no special attributes of matings to be set in Mausoleum. Therefore only a "Mice"-tab is shown in the Mating Inspector. In this tab you see a table with the mice which are contained in the selected matings.

Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a snapshot of the cage contents will open:



16.3 Setting up a mating

In Mausoleum there is no special procedure to set up a nating, Combining a male with one or more females in a cage automatically defines this cage as a mating cage as soon as the mice have reached the predefined sexual maturity. Sexual maturity is default to six weeks or 42 days. It can be adjusted between 21 and 56 days and overrides the preceding category.The sexual maturity can be set for strains, lines and individual mice. The sexual maturity for a mouse is determined using this scheme:

- check the mouse. If a maturity limit ist specified for the mouse use it.
- check the line of the mouse If a maturity limit ist specified for the line use it.
- check the strains of the mouse If a maturity limit ist specified for one of the strains use it.
- use the default value of six weeks

It is important to note that it is absolutely crucial that the correct date for the transfer of mice into a cage is given by the user because Mausoleum wil determine from these dates the father for a litter. Also other parameters such as the breeding perfomance relie completely on accurate dates for the mouse transfers.
Adding females to a cage with more than one male is prohibited by the Mouse pope and reported to the GURU as improper mouse handling. An alert will pop up if this happens.
Breeding performance can be evaluated by selecting "Mating report" in the context menu of mouse tables. If the same mice have been moved around you can also track with the "Visit report" command in the context menu of mouse tables.

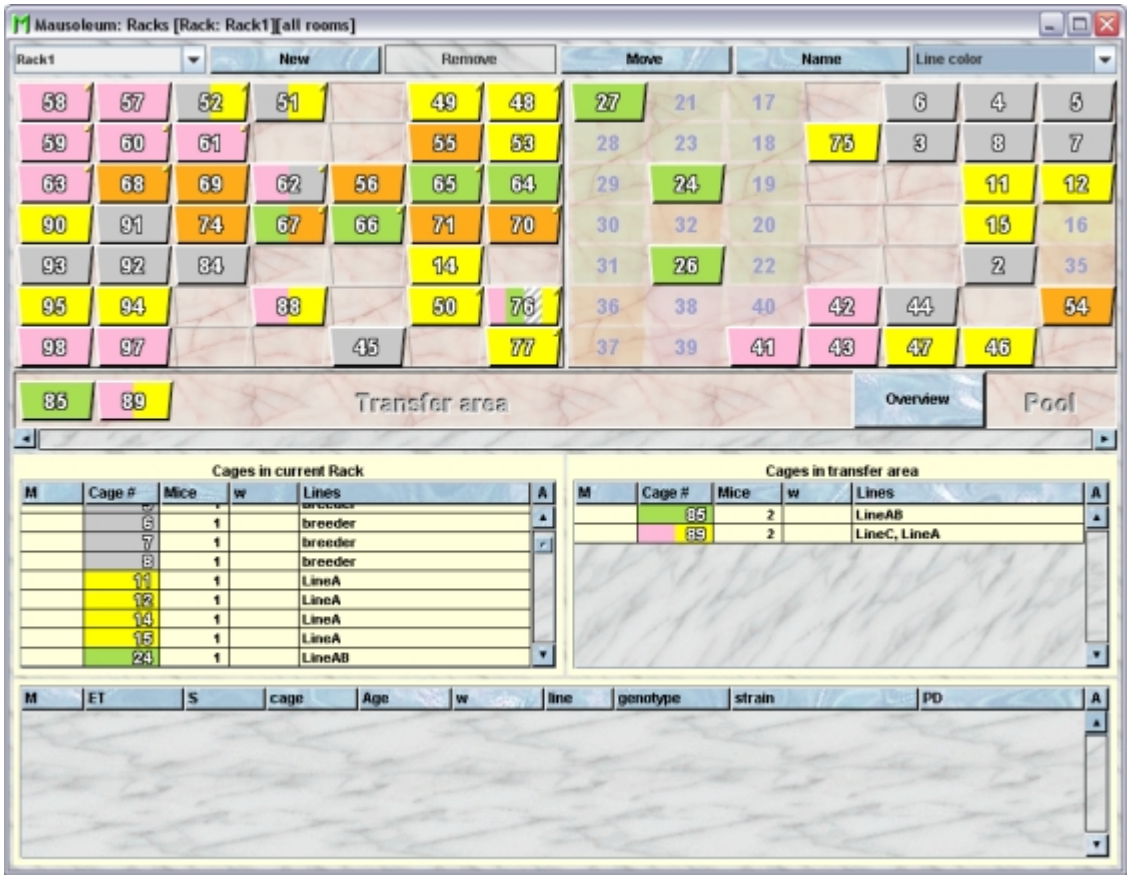
17 Rack window

17.1 In brief

Racks are in a normal clients not shown as a table. They are displayed in a special window where you find a graphical represenation of the rack and the cages within that rack. There are also tables with the cages in the cureently displayed rack and the cages which are at the moment not located in a rack as well as a table for the mice in the selected cages. From the rack window you can bring up the rack overview which shows a miniature display for all the racks of your group.
The mice and cages can be transferred using simple drag and drop gestures. If necessary, cages will be created automatically. In the rack window there is also the pool area for mice and cages. This pool is no physical location it is rather comparable to shopping carts in online shops where you store items for later use.

17.2 The rack window

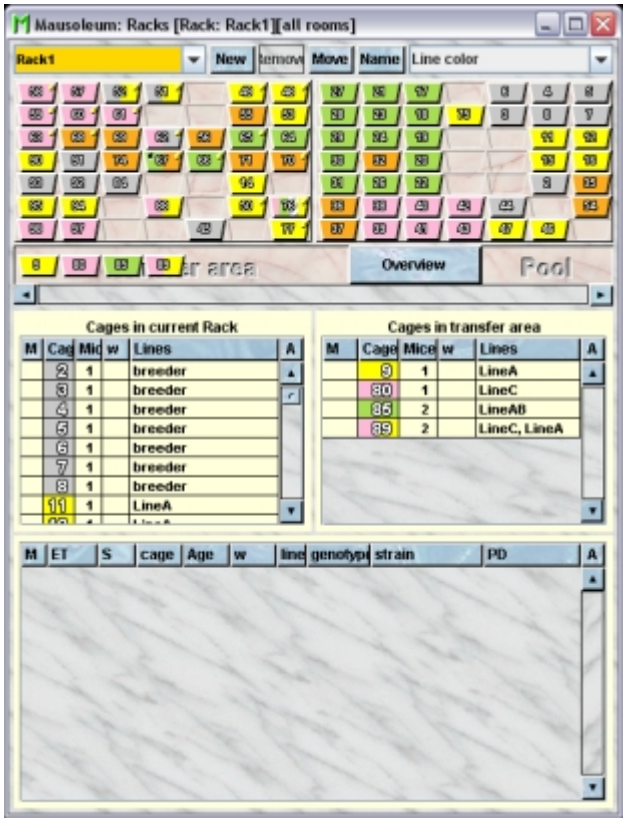
The main part of the window is occupied by a graphical represenation of the actually selected rack. You see in two fields (if applicable) the front and back side of the rack with the cages which are located in that rack.



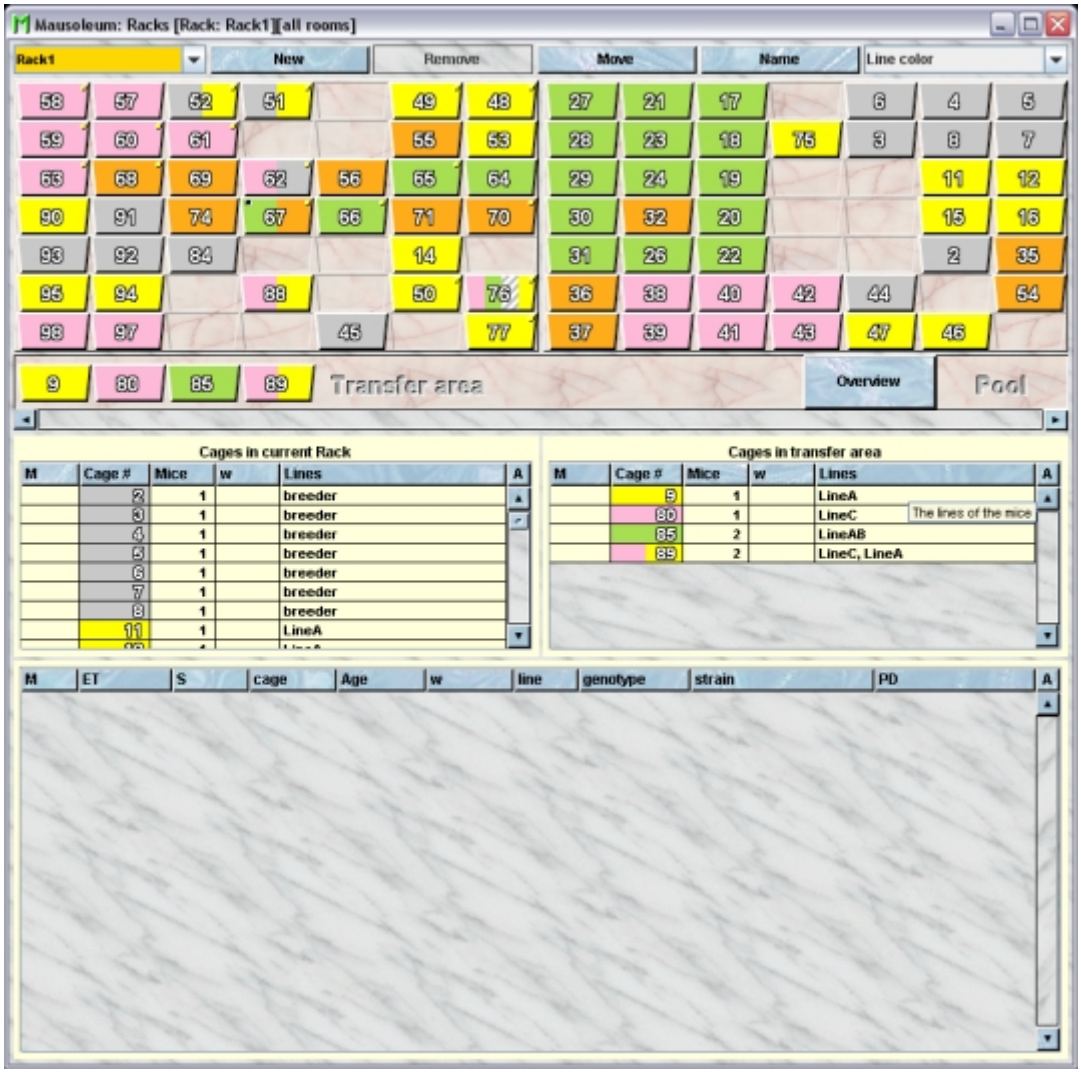
In the topleft corner you select which rack you want to look at. The names of the racks are shown. in the selection field and the racks wich are shared between groups and under the supervision odf the service group are shown with an "**[S]**" in fornt of the rack name. Nobody except the **head of the service group** can change the name or location of these racks.

Immediately below the graphic representation of the current rack, cages in the **transfer area** are shown. These are available cages not currently placed in a rack. They could for instance represent empty cages to be used at a later stage or animals that are temporarily moved to another room for examinations. It is also a convenient temporary storage if cages are to be placed in a different rack. The transfer area stays the same when changing racks.
Below the transfer area are **two cage tables** showing cages in the current rack (left) and in the transfer area (right). These tables act like normal cage tables as described **here**.There is only difference for the left table with the cages of the current rack. Selection of cages in this table will cause the respective cages to blink in the rack display. Also will clicking on one of the cages to a selection in the left cage table.
The **mouse table** at the bottom of this window shows the mice in the currently selected cages. These tables act like normal cage tables as described**here**. In the mouse and cage tables you can specify whether you want to see all objects of the group or only the objects you own. To switch between these display modes you use the little "**A**" button in top right corner of the table:

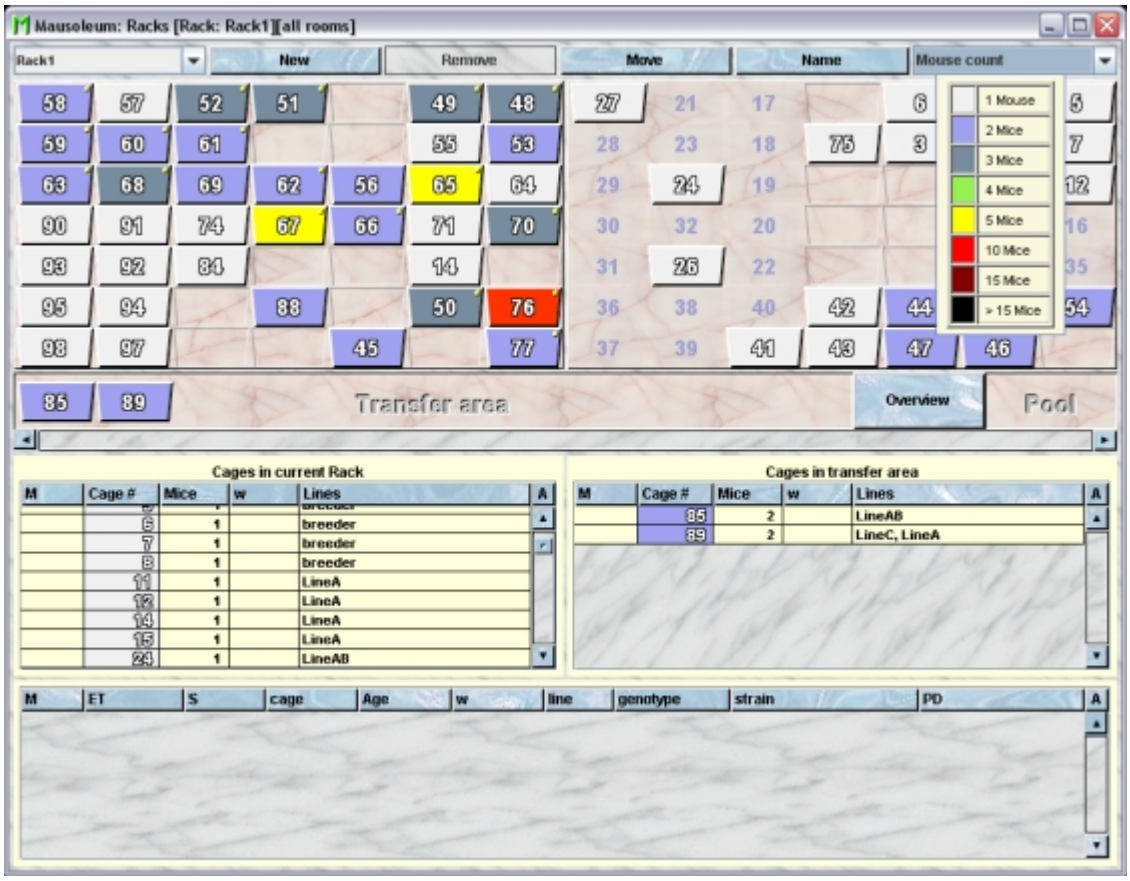
If this button is active (pressed) you will see all objects of the group. Your own objects are shown in black whereas objects owned by other users are shown with a blue font color.
The **display size of the cages** depends on the horizontal size of the window and vice versa. This means: if you change to a rack with a different size the window will adapt in size to the number of rows and coulmns of the selected rack keeping the display size of the cages constant. On the other hand if you resize the window horizontally the display size of the cages will change. Reducing the width of teh window will therefore shrink the whole rack display as shown here with the same rack as above after a horizontal resize:



Vertical resizing however will not change the display size of the cages. It rather will change the size of the mouse table at the bottom of the window. Here you see the same window as above is shown after vertical reisze:

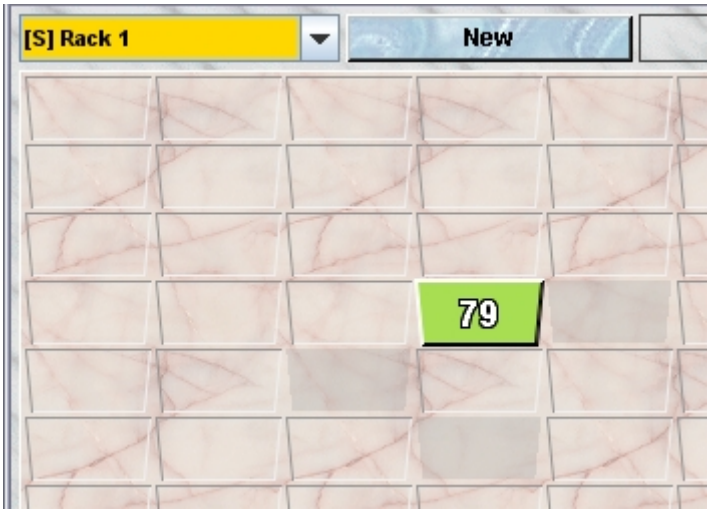


The selection box at the top right is used to select the **color mode** for the cages to extract information on their features. A more detailed description of the available color modes can be found **here**. You will get a tooltip while your mouse pointer is over this selection field describing the currently selected color mode.



17.2.1Cages from other groups in a shared rack

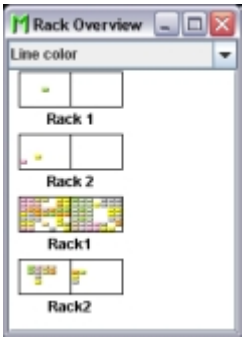
If the rack is shared between different group (for detailed description see **here**), certain spots in the rack can be occupied by cages from other groups In Mausoleum you cannot peek into these cages but you can clearly see that the spots in the rack are occupied. The respectove spots are marked as block by a grey color:



Thes spots are marked as occupied and you can drag neither mice nor cages there. The other groups who share this rack with your group will have the same picture for your cages. As soon as these cages are moved the other groups sharing this rack get notified and the display adapts to the new situation.

17.2.2Rack overview

To the right of the transfer area there is the rack overview button. Clicking this buttons opens a window showing a miniature image of the racks painted with the same color mode as the current rack. Also here yoi can select the desired color mode. The color mode in the rack window and the rack overview will be always the same. Selecting one of the racks in the rack overview will select the rack in the rack window.



Also here you can select the desired color mode. The color mode in the rack window and the rack overview will be always the same. Selecting one of the racks in the rack overview will select the rack in the rack window.

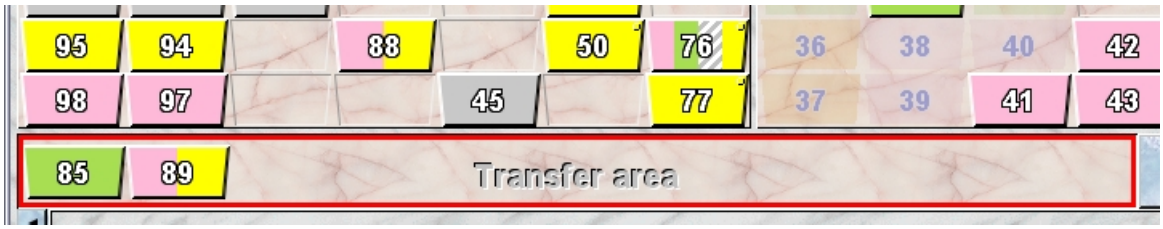
17.2.3Drag and drop support

MIce and cages are moved in the rack window by simple drag and drop. You can select a mouse or cage in a table or in the rack representation (only cages) and drag it to desired position. While dragging the the mouse pointer adapts the shape to the dragged objects. If you drag your mousepointer to a spot where the dragged objects can be put you see a thick red border around this spot. Releasing the mouse button will move the mouse or cage to this position.
in case of a real transfer of mice you will be asked for a date for that transfer. It is very important to note that you should be very careful with these dates. The dates of visits are used later for determination of fatherhood of litters or breeding performances. Also cage mates can be only determined if the dates of entry and leave are precisely defined.

Dragging cages

A single cage can be dragged to an emtpy spot in the rack representation. It cannot be moved to a position which is already ovccupied.

A single cage and also more cages can be dragged to the transfer area.

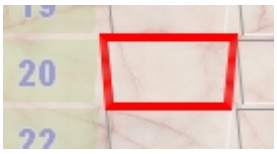


You can also drag cages to the Pool area which is not really a transfer. It only collects cages or mice for a later treatment like you are used to from shopping carts in online shops.

Dragging mice

Mice can be dragged to existing cages if they belong to your group and not to another group which shares the same rack with your group.

Mice can be also be dragged to empty süots in the rack representation. If you drop them here, a new cage will be created automatically.



Cages in the transfer area are also a suitable target for dragging mice.

You can also drag the mice into the transfer area if you drag your mouse pointer to spot within the transfer area but not on top of a cage therein. Also here a new cage will be created automatically if you drop the mice.

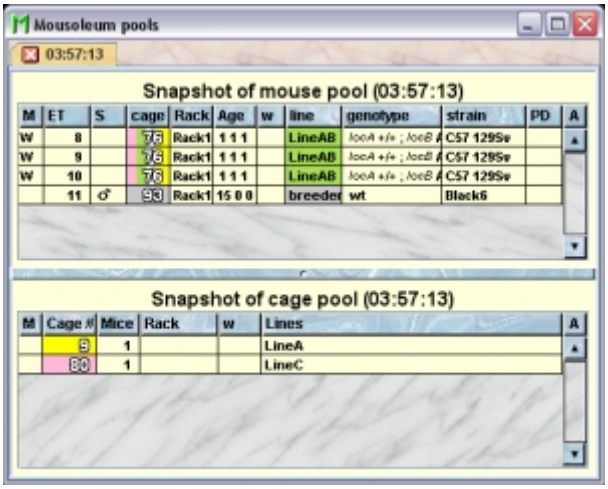
You can also drag mice to the pool area which is not really a transfer. It only collects cages or mice for a later treatment like you are used to from shopping carts in online shops.

17.2.4The Mausoleum pool for mice and cages

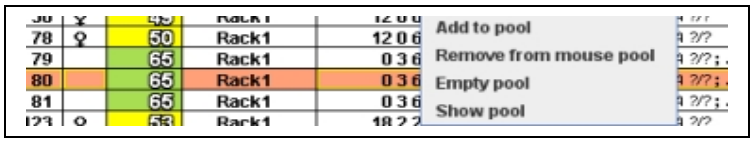
The pool area in the Rack window can be used like the shopping carts in online shops. You can simply drag mice and cages and drop them in to this field. Nothing will happen to them they will be only collected. The actual contens of the pool is symbolized by small icons:

Using the context menu in the pool area (invoked by right mouse click) you can invoke two actions:

- **Empty pool**: This wil empty the pool removing all mice and cages you put in.
- **Show pool**: Selecting this item will bring up the window with the pool snapshots. Here you find in the last tab the actual contents of the Mausoleum pool. This table will stay there unless you remove the tab. This makes it possible to collect different subsets in the pool. To do so you drag the objects into the pool area, select "**Show pool**" in the context menu and "**Empty pool**" thereafter. Now the pool is empty and you can collect the next subset. The collections will stay in this window.



There is alternative way to move mice in to the pool. In all mouse tables you have items for handling the Mausoleum pool in the context menu which you get using the right mouse button.

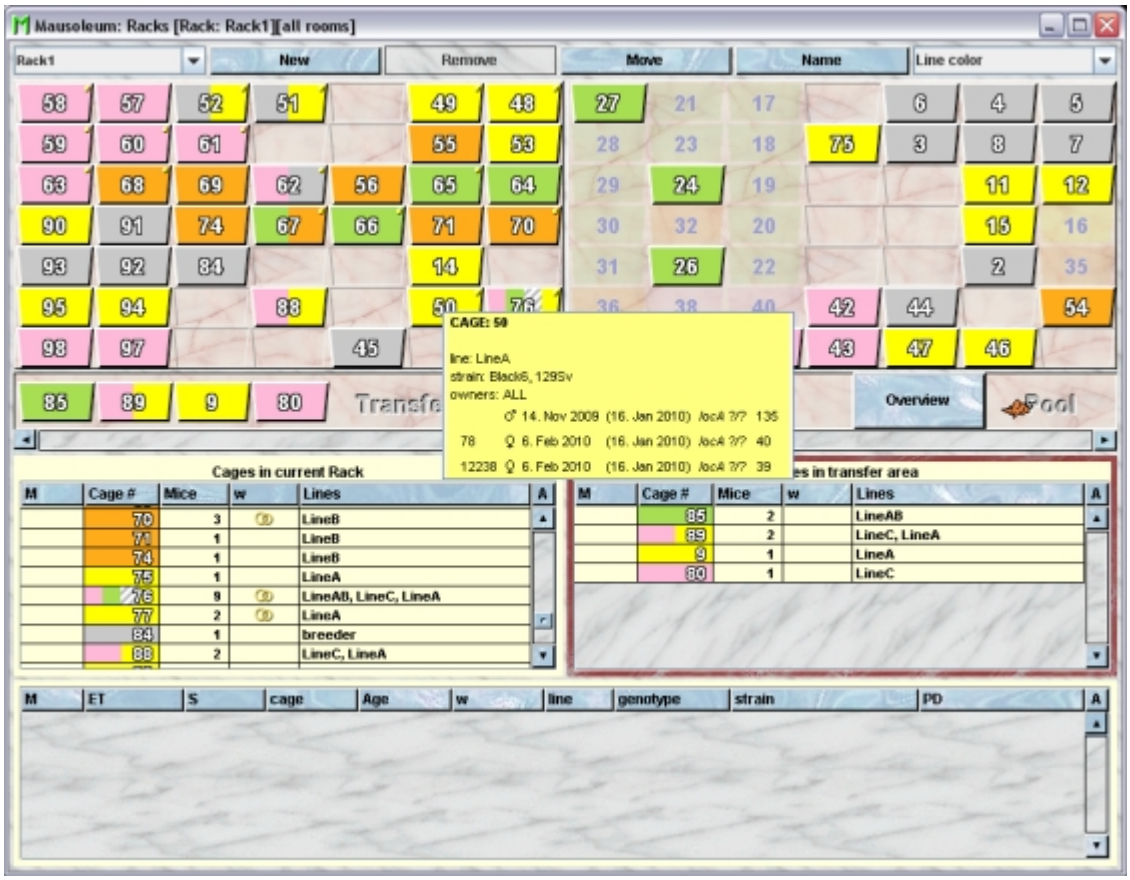


The context menu allows these actions:

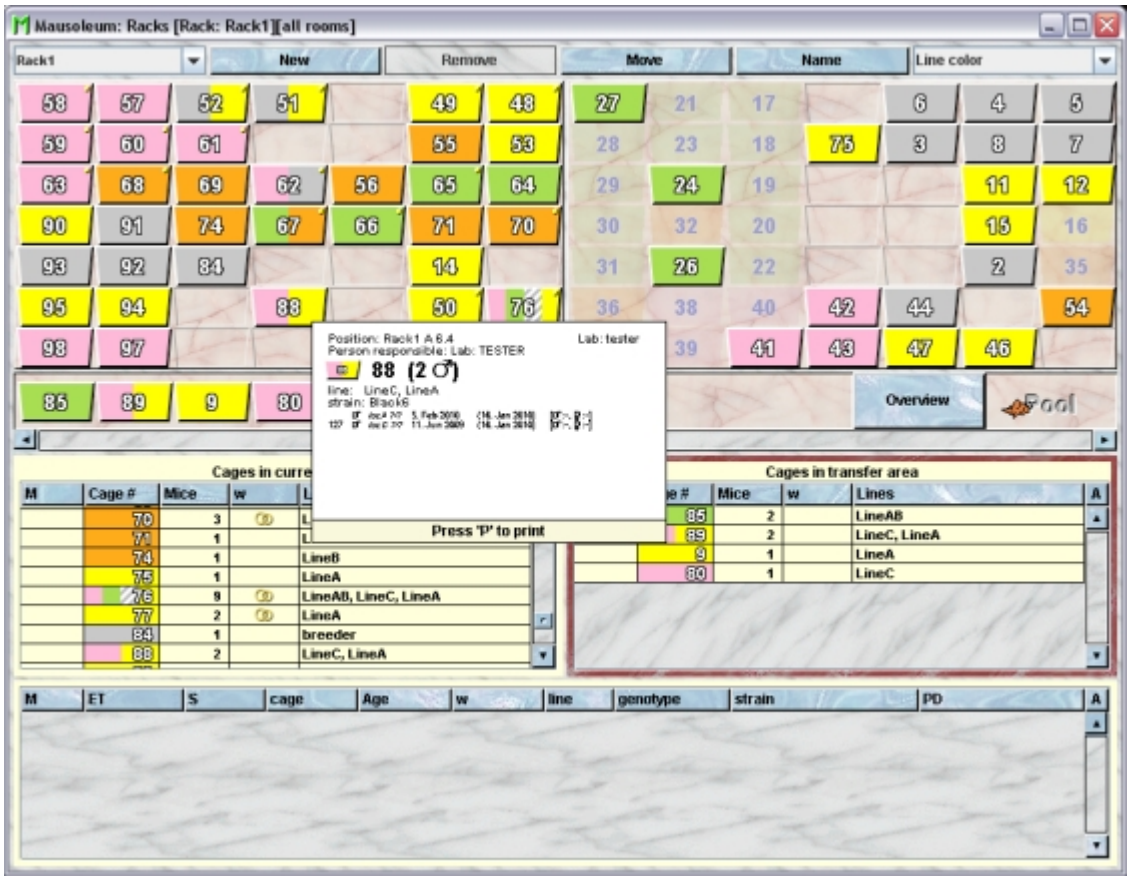
- **Add to pool**:Adds the select mice to the Mausoelum pool.
- **Remove from mouse pool**: Removes the selected mice from the Mausoleum pool if possible.
- **Empty pool**:This wil empty the pool removing all mice and cages you put in.
- **Show pool**:Selecting this item will bring up the window with the pool snapshots as described above.

17.2.5Cage tooltips

If the use of tooltips is set to "On" in the **Preferences** you will get a tooltip when you move your mouse pointer over a cage. The basic tooltip is a little table describing the contents of the cage:



But you can also get a cage card as it would be printed using your default cage card printer. This can be specified also in the **Preferences**. In addition you can specify the zoom size of the cage card shown as tooltip.



If you press the "**P**"-key while this tootip is shown the cage is printed directly. After a change of the default cage card printer also the appearance of this tooltip changes:

17.2.6Display of own and foreign cages

You can specify in several modes how your own and foreign cages from your group are distinguished. You can set that mode in the Preferences dialog described **here**. The icons dcan differ in border color intensity and the display of the cage number. As an exmaple you see here own and foreiign cages using the mask mode "**Mask all"**

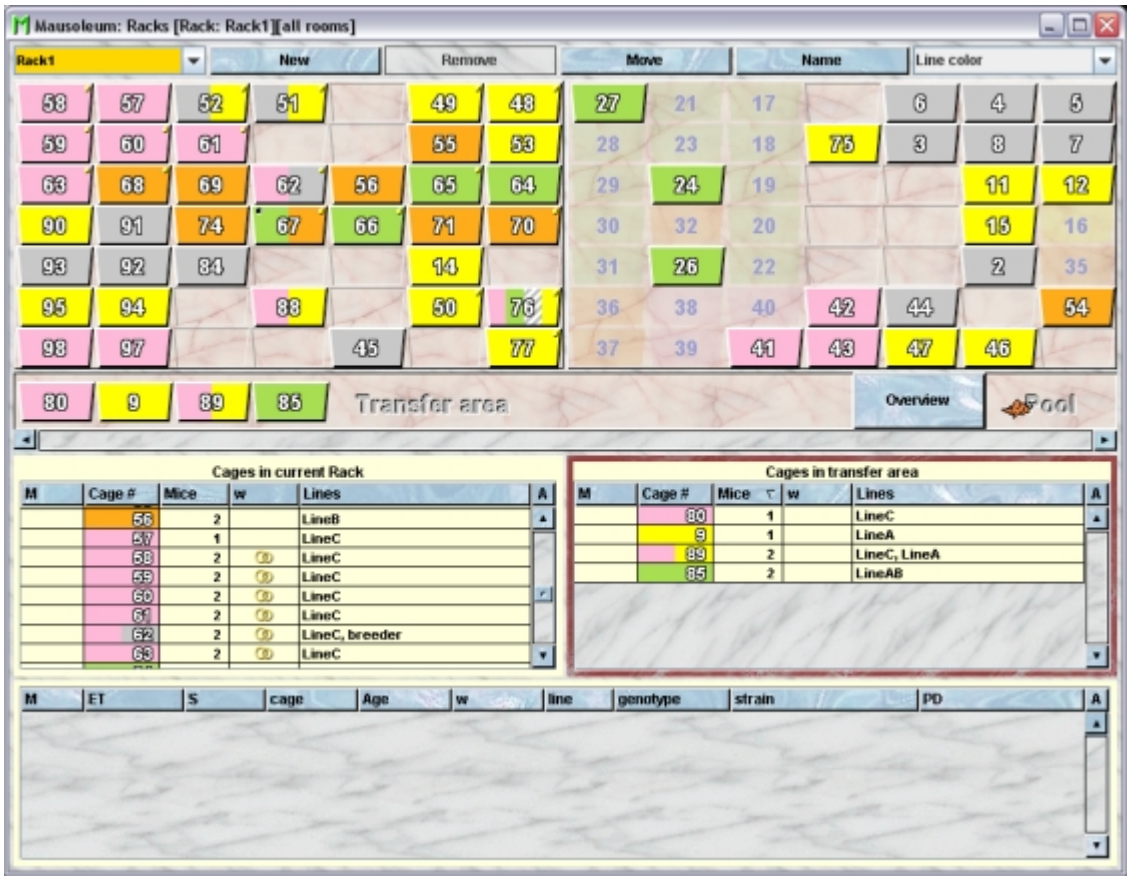
The same cages are shown now using the mask mode "**Mask nothing**":

17.2.7Highlight marked and mating cages

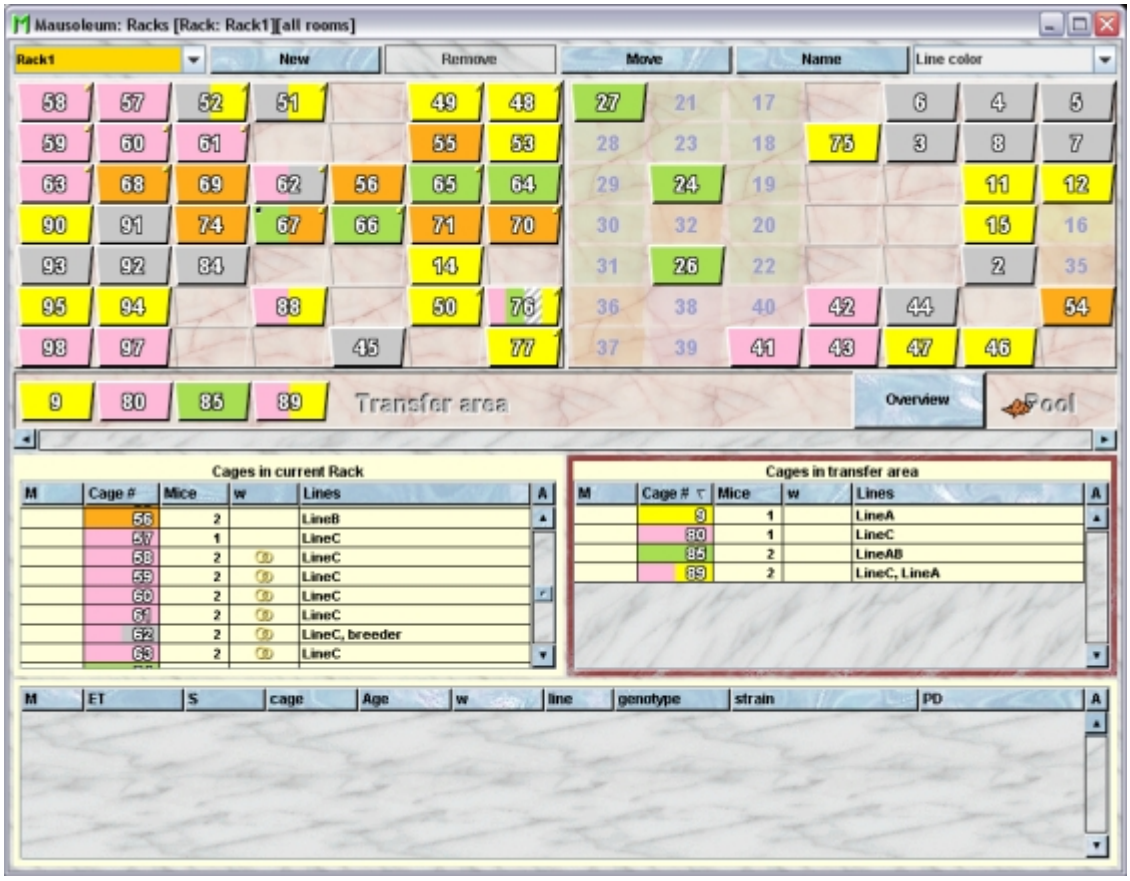
Breeding cages are always identifiable by a small golden spot on the upper right corner of the cage symbol (in the example: cage 62 and 67) except when the color mode "**Mating**" is chosen. Cages with a mark (the standard pointer or single letter in cage tables) are shown with a little black spot in the upper left corner of the cage symbol (in the example: cage 67).

17.2.8Order of cages in the transfer area

The order in which the cages in the transfer area from left to right are shown reflects the order of these cages in the corresponding right cage table from top to bottom. In this exmaple the cages are sorted by the mouse count.



If you sort them according to the cage number not only the order in the table but also in the transfer area changed:



17.3 Creating a new rack

Only the GURU of a group can add new Racks. Rack s which are created from a GURU of the group can be used from users of the group without any problem but they cannot be shared with other groups. If you share racks and rooms with other groups it is preferable not to create proprietary racks. Rather let the head of the service group create the racks. Clicking the blue "**New**"-button on top of the rack window brings up a dialog in which you are asked for the name and the dimensions of the rack:

You are neither allowed to set an empty name (“”) nor to use a name which is already given to another rack. For the dimensions of the rack you have here the following options:

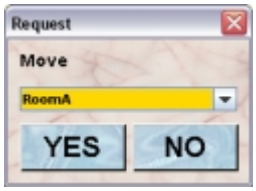
- **sides**: 1 for single- or 2 for double-sided racks
- **rows**: 4 to 15
- **columns**: 4 to 15

Clicking “**YES**” brings up the dialog which lets you specify the date when this rack was added to the group.

Clicking “**YES**” adds rthe new rack to your group.

17.4 Specifying the location of a a rack

The GURU can specify the room where the rack is located. This is only possible if the selected rack is not shared with other groups. If that's the case the location of the rack can only be specified by the head of the service unit. You can specify the location of the selected rack by clicking the "**Move**"-button. If you select the room of teh rack in the next dialog and click "**YES**" the new name is set in the database.



17.5 Renaming a rack

The GURU can change the name of a the rack. This is only possible if the selected rack is not shared with other groups. If that's the case the name of the rack can only be changed by the head of the service unit. You can specify the new name of the selected rack by clicking the "**Name**"-button. If you enter the new name in the next dialog and click "**YES**" the new name is set in the database.

17.6 Removing a rack

The GURU can remove empty racks. This is only possible if the selected rack is not shared with other groups. If that's the case the rack can only be removed by the head of the service unit. Clicking the blue "**Remove**"-button on top of the rack window brings up a dialog in which you are asked for the date of the removal:

Selecting the approriate date and clicking “**YES**” removes the rack from your group.

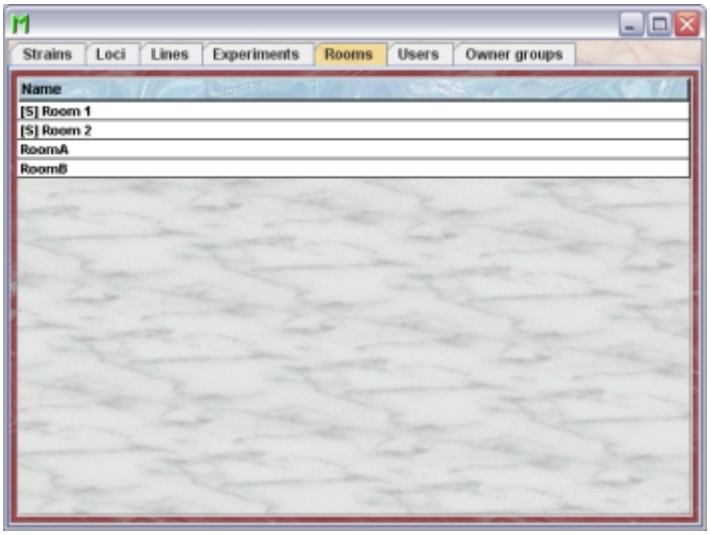
18 Rooms

18.1 In brief

Rooms are the objects where racks can be placed in. They should correspond to real rooms of your animal facility or mouse house. Rooms can have an assigned security- or hygiene-level. Mouse transfers between rooms of defined security level are detected and discouraged by tghe mouse pope of Mausoleum.
Rooms can be shared between groups if the general service group is used to maintain the shared objects.

18.2 The room table

After clicking "**Rooms**" in the object selection field of the **inspector** you will get the table with all active rooms.



You can see in this exmaple two rooms which have an "**[S]**" in front of the room name. These rooms are shared between groups and maintained by the**service group**. You can see in a regular group only their attributes. Nobody - not even the GURU - can change anything for these rooms. This is only possible for the **head of the service group**. The other two rooms are not shared and therefore maintained by this group. The GURU can cahnge their attributes.
Using the context menu you can specify which attributes of the users should be shown in this table. These attributes are available for a user table:

Column header	Description	Sortable	Filterable	Colorable
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Name	The room name	X		
Security level	Shows the security level of the room	X		X

end	The end date of the object	X		
start	The start date of the object	X		

18.3 The room inspector

The room inspector is active as soon as the room table becomes the active table. It will adopt to the attributes of the selected rooms and lets the GURU modify the attributes. The room inspector has two tabs

18.3.1 The "Attributes" tab

It shows the attributes of the room:

- **Name**:The name of the room
- **Security level**: There are three security or hygiene levels. They can be defined for each room. In general Mausoleum does not like transfers of mice between different rooms which have a defined security level. Nothing changes if the mice are not sitting in a room with a defined security level or if they are not moved in to a room with a defined security level. But if mice are tranferred between rooms with defined security level you will get an Mouse Pope Alert and an email is sent to the responsible people. If the security of the target room is higher the user has to justify the transfer by a comment which is appended to the mail.
- **Description**: In this field you can type in comments to the respective room. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one object is selected.
- The racks placed in the room are listed in the field right to the Description area..

18.3.2The "Documents" tab

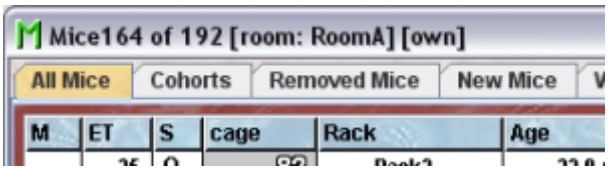
This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the rooms of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

18.4 Restricting the scope to one room

It is possible to limit the tables and views to what is contained in the selected room by clicking the “**Use this room**” button. This restriction makes overview easier when animals in other rooms are hidden from view. To be bit more precise: In e. g. the primary mouse table only those mice are shown which are in the specified room or have no defined position in a room.
If you select this button and restrict the sope to one room this is indictaed in the "Room-Status"-filed og the room inspector.

Maybe you also noticed that the restriction is also as a reminder indicated in the title-bar of the inspector. It is also indicated in the title bar of the mouse-window.



You can switch back to remove the restriction and to see all objects by clicking the button "**Use all rooms**".

19 Users

19.1 User categories

Mausoleum has a detailed role concept which regulates the privileges of each user of a group. The head of the group is the so called GURU. The Administrator creates a GURU with each group. The GURU must be the first to log in to a newly created group. It is recommended to change your password at first login.

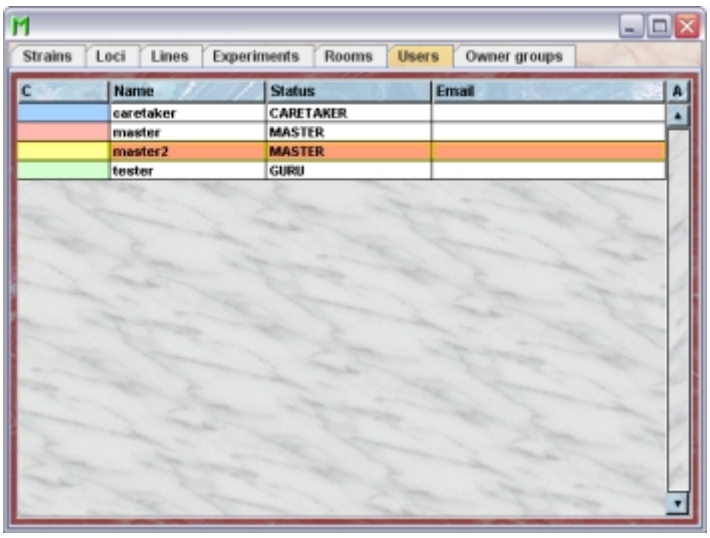
- **GURU:** can handle all objects and is allowed to create new users, racks, loci, lines and strains. The GURU can create the following user categories GURU, MASTER, STUDENT, CARETAKER, NOVICE and EXTERNAL.
- **MASTER:** can handle his/her mice and cages including changing their attributes
- **STUDENT:** can handle his/her mice and cages including changing their attributes but cannot create new mice.
- **CARETAKER:** can handle all mice but cannot be the owner of mice
- **NOVICE:** can read everything but cannot change anything
- **EXTERNAL:** can only see his/her mice.

A different set of user categories is used in the **service group**. In this group there are only two possible kinds of users:

- **HEAD OF SERVICE**: This user is the main user of the service unit. This user can create new racks and rooms and is responsible for the distribution of these objects to the groups. In addition this user can create reports for the groups and for the whole service unit. The Administrator creates a the HEAD OF SERVICE users.
- **SERVICE CARETAKER**: This user is the one working with the mice and cages within one room. He or she can see and modify the attributes of all the mice within the room regardless of the group to which they belong.

19.1.1 The user table

After clicking "**Users**" in the object selection field of teh inspector you will get the table with all active users.



Using the context menu you can specify which attributes of the users should be shown in this table. These attributes are available for a user table:

Column header	Description	Sortable	Filterable	Colorable
C	The color of the user	X		
Email	The email address of the user	X		
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Name	The user name	X		
Status	The user status	X	X	
end	The end date of the object	X		
start	The start date of the object	X		

In the user table a GURU can specify whether only the active users should be displayed in the table or also the inactivated users. To switch between these display modes you use the little "**A**" button in top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

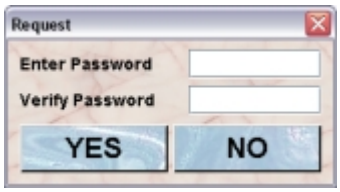
19.2 The User inspector

The user inspector is active as soon as the user table becomes the active table. It will adopt to the attributes of the selected user and lets the user modify the attributes if the user has sufficient privileges to do so. The user inspector has four tabs

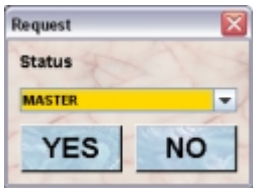
19.2.1The "Attributes" tab

It shows or enables to change the attributes of the user. All users, except NOVICE and EXTERNAL can change their password, colour and language. Changes take effect upon subsequent log in.

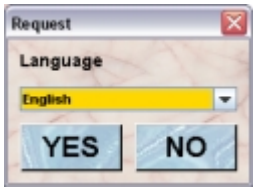
- **Name**: The login name of the user. This name must not contain spaces or other special characters.
- **Password**: The password is not shown here. You can only change the password here You can of course only change your own password here unless you are GURU of the group. Upon clicking this button a dialog appears in which you type in verify the new password for the user:



- **Status**: Here the status of the user is shown. Only the GURU can change the status of users. Upon clicking this button a dialog appears in which the GURU can select the new status for this user:



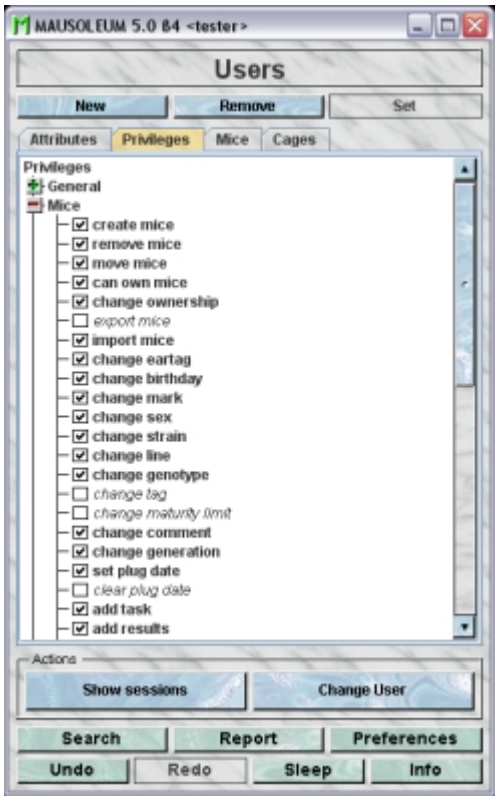
- **Language**: Shows the language of the user. You can of course only change your own language here unless you are GURU of the group. Mausoleum is currently available in english, deutsch, norsk and svenska. If other languages are needed there is no problem installing new langugaes but you should provide people capable and willing to translate the various texts of Mausoleum in the desired language. Upon clicking this button a dialog appears in which you can select the wanted language of the user:



- **Email**: This field shows the regular email of the user. It is just an information. Mausoleum will not send regular emails.
- **Color**:The GURU or the user himself can assign a color to a user. It is very convenient to assign colours such that owners of mice can be discerned or grouped. A description of the Color choose dialog can be fond **here**.

19.2.2The "Privileges" tab

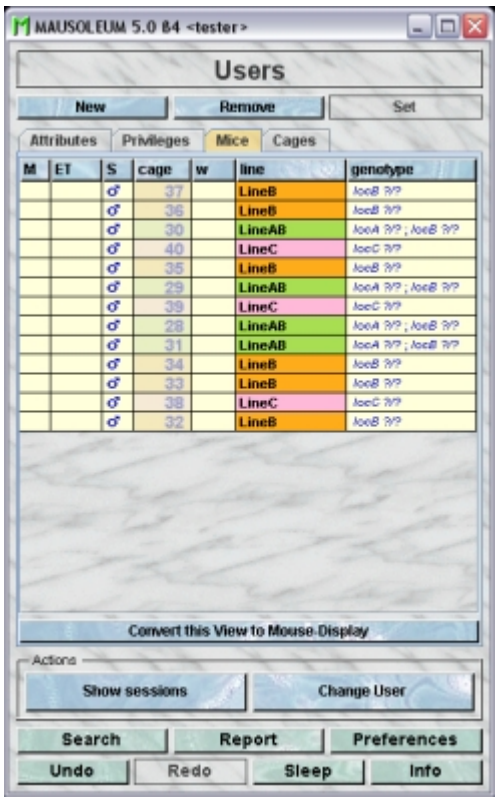
In the role concept the privileges for every action are defined for each user category. In case the privilege assignment does not completely reflect the wanted privileges for a user in your group the GURU of the group can selectively remove certain privileges for the selected user in this tab.



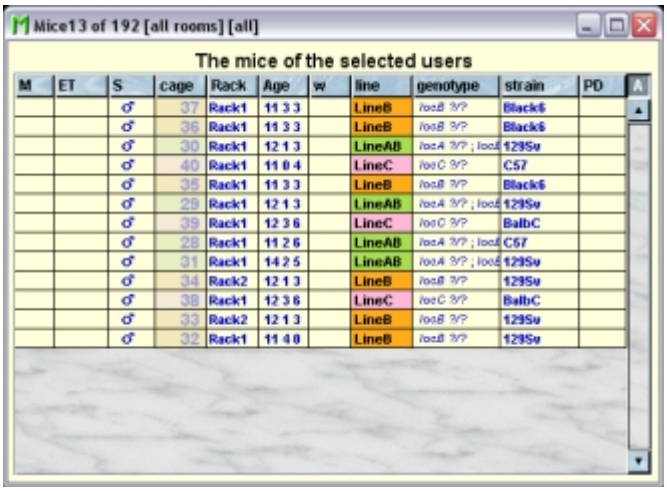
The privileges are shown in a tree grouped by object type. By selecting or deselcting the checkmark the GURU can grant or remove the particular privilege for this user.

19.2.3The "Mice" tab

In this tab you see a table with the mice which are owned by one of the selected users.

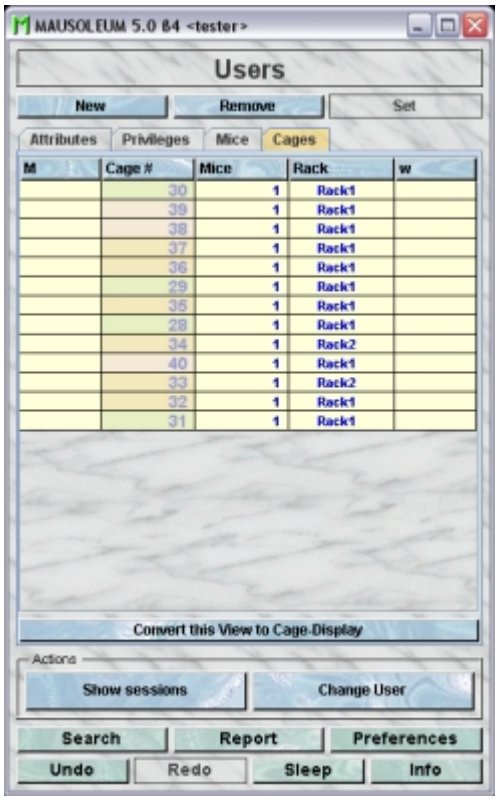


Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containg the mice will open:

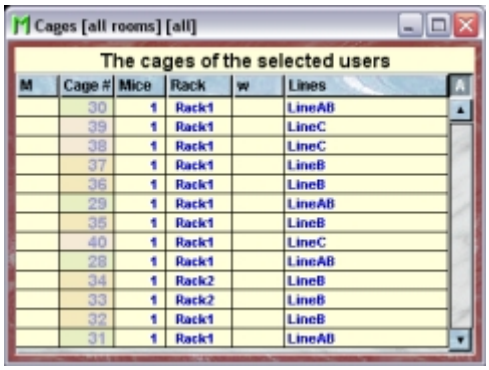


19.2.4The "Cages" tab

In this tab you see a table with the cages which contain mice which are owned by one of the selected users.



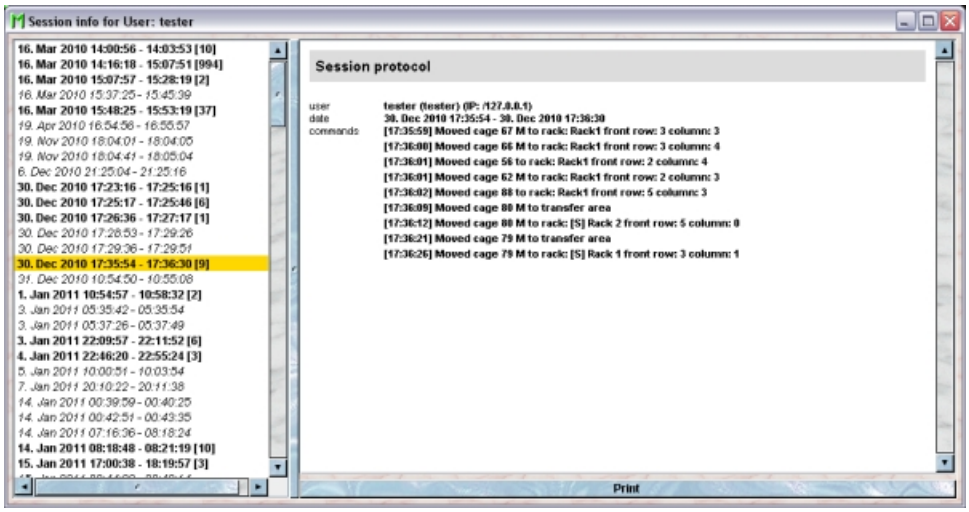
Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cage table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



19.3 The actions

In the "Actions" area of the inspector you find blue buttons which invoke various actions not directly connected to the attributes of the selected objects:

Show sessions: Clicking this button opens a window where all the sessions of this user are shown in the list on the left side of the window. Session in which the user performed some changes in the database are shown in bold. The others are shown in italics. Selecting one of the sessions brings up the protocol of the selected session in the text field on the right side of the window.



Change user: This allows you to driectly switch the user (nelonging to the same group) of the Mausoleum client thereby omitting the initialization procedure. The procedure is described **here**.

19.4 Adding users

Only GURUs can add and remove users. The GURU adds user name, a password, language and may assign a colour to the user. All users, except NOVICE and EXTERNAL can change their password, colour and language. Changes take effect upon subsequent log in.
The Name and Color of the primary user can be shown in a separate column within the mouse-tables.

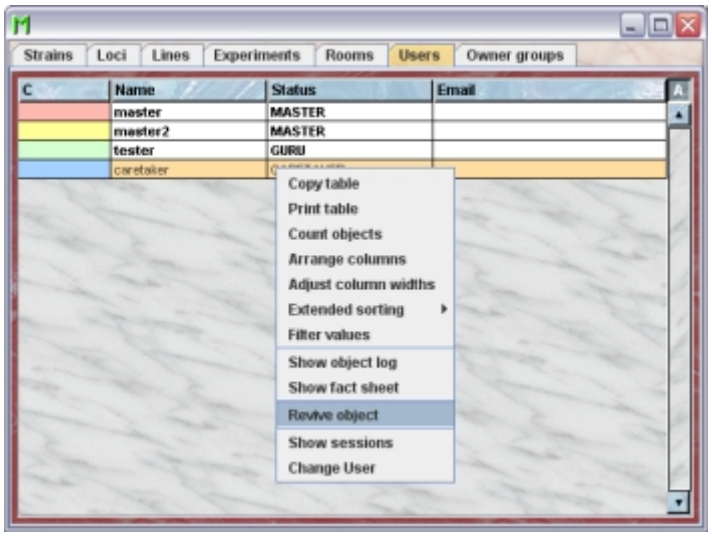
19.5 Removing users

Only GURUS can remove users. Removing a user will not remove it from the database. It merely becomes invisible to the users and cannot login and cannot be selected as owner for a mouse anymore. But mice owned by the repsective user keep it even if it was removed.
To remove a particular user select it in the user table and click the "**Remove**"-button in the user inspector. If you answer the security dialog with "**YES**" the user will become invisible.

19.6 Reviving users

The GURU of Group can revive removed users. To do so first you have to make the user visible in the user table. You can do it using the "A" button in the upper right corner of the table.

Then you have to select the particular user and select "Revive object" in the context menu (invoked by right mouse click)


Strains
Loci
Lines
Experiments
Rooms
Users
Owner groups
C
Name
Status
Email
master
MASTER
master2
MASTER
tester
GURU
caretaker
Copy table
Print table
Count objects
Arrange columns
Adjust column widths
Extended sorting
Filter values
Show object log
Show fact sheet
Revive object
Show sessions
Change User

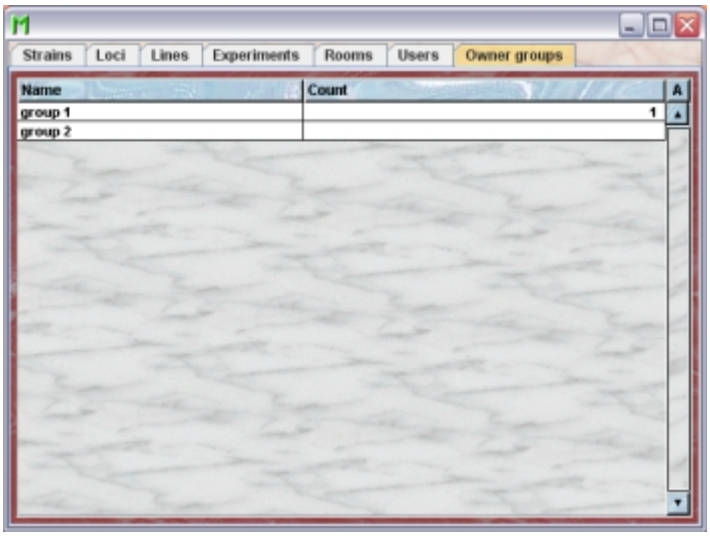
20 Owner groups

20.1 In brief

Mice can be owned by users who are either MASTER, EXTERNAL, STUDENT or GURU. If some members of your lab share mice it can be a bit unconvenient to add all of these users independently as owners of the respective mice. Even worse when one of those people leaves the lab. Then you have to remove this member manually from the owner list of the shared mice. To make these thing easier there are the owner groups which contain an arbitrary number of users who have the privilege to own mice. You can set such a owner group as owner of mice just like a normal user. When Mausoleum tries to figure out whether the logged in user might alter the mouse it first checks whether the user directly owns this mouse and if not it looks whether the user is member of a group listed as owner of this mouse. If members are added to or removed from an owner group this mechanism automatically ensures that the permission changes immediately for all mice owned by the respective owner group.
Only GURUs can add and define owner groups.

20.2 The owner group table

By clicking "**Owner groups**" in the object selection field of the Inspector you will get a window with the table of all actually defined owner groups of the group.



Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the owner groups should be shown in this table. These attributes are available for the locus table:

Column header	Description	Sortable	Filterable	Colorable
Color	The color of the owner group	X		
Count	The count of contained objects	X		
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	

ID	The technical ID	X		
Name	The name of the owner group	X		
end	The end date of the object	X		
start	The start date of the object	X		

In the owner group table a GURU can specify whether only the active owner groups should be displayed in the table or also the inactivated owner groups. To switch between these display modes you use the little "**A**" button in top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

20.3 The Owner group inspector

The owner group inspector is active as soon as the owner group table becomes the active table. It will adopt to the attributes of the selected owner group and lets the user modify the attributes if the user has sufficient privileges to do so. The owner group inspector has four tabs

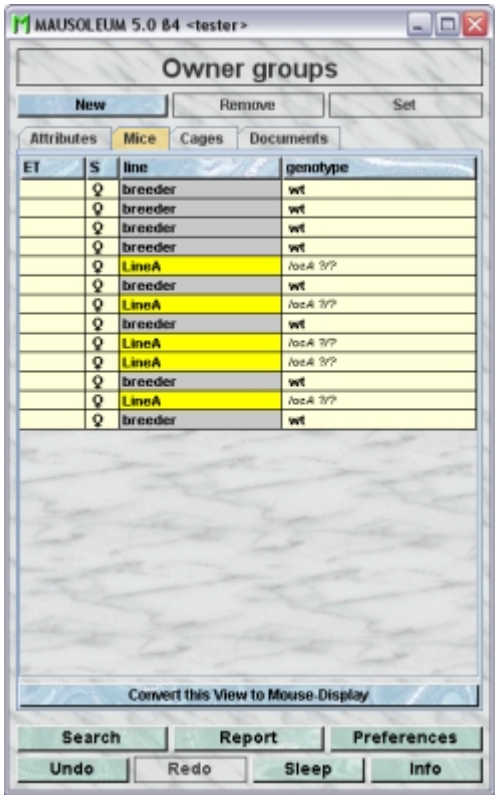
20.3.1The "Attributes" tab

It shows the attributes of the selected owner group:

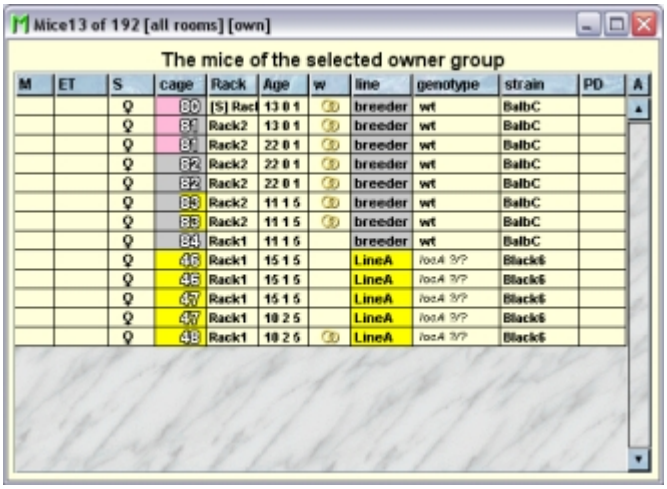
- **Name**: The name of the selected owner group. It can be changed by the GURU.
- **Color**: The GURU can assign a color to a owner group. It is very convenient to assign colours such that owner groups can be discerned or grouped. A description of the Color choose dialog can be fond **here**.
- **Description**: In this field the GURU can type in a more thorough description of the selected owner group. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one object is selected.
- In the middle section of this tab you find a table which shows the current members of the select owner group. The GURU can add new members by clicking "**Add member**". In a dialog the possible candidates are presented. The candidates are the actual users of the group who can own mice and are not member of the selected owner group already. The GURU can remove members by selecting a user in the member table and clicking the button "**Remove member**".

20.3.2The "Mice" tab

In this tab you see a table with the mice which are owned by one of the selected owner groups.

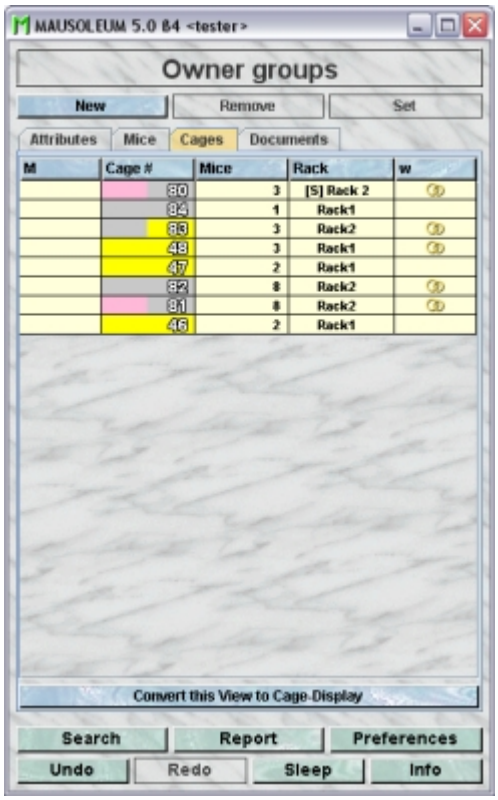


Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containg the mice will open:

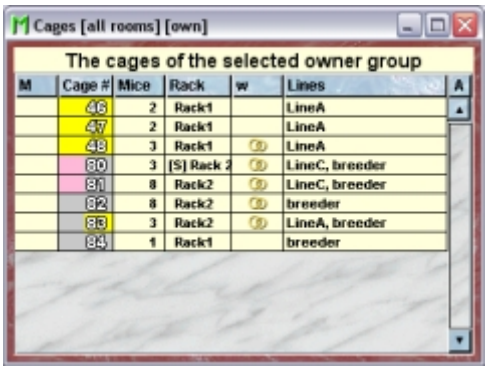


20.3.3The "Cages" tab

In this tab you see a table with the cages which contain mice which are owned by one of the selected owner groups.



Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cage table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



20.3.4The "Documents" tab

This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the owner groups of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

20.4 Adding Owner groups

A GURU can add new owner groups. To do so select "**Owner groups**" in the object selection field of the Inspector. After clicking the "**New**"-button in the inspector you will be asked for the name of the owner group:

After typing the name of the new owner group you confirm the dialog by clicking "**YES**" and the new owner group will be created in the database.

20.5 Removing Owner groups

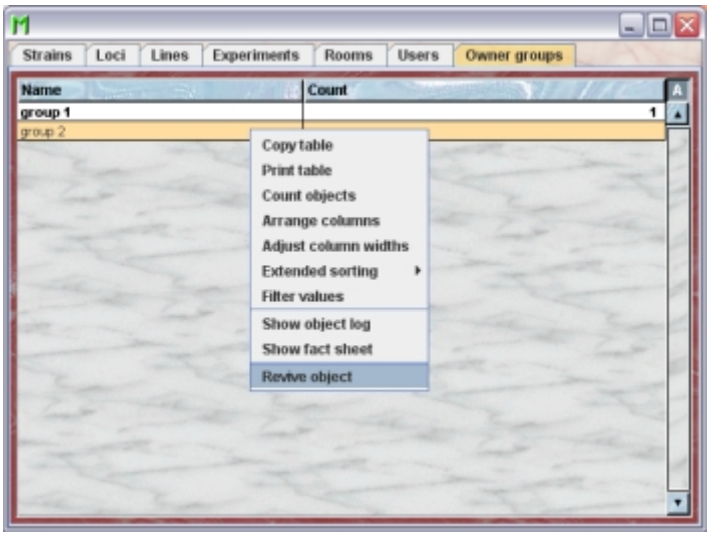
Only GURUS can remove owner groups. Removing an owner group will not remove it from the database. It merely becomes invisible to the users and cannot be selected as owner for a mouse anymore. But mice having the respective owner group defined as owner keep it even if it was removed.

To remove a particular owner group select it in the owner group table and click the "**Remove**"-button in the owner group inspector. If you answer the security dialog with "**YES**" the owner group will become invisible.

20.6 Reviving Owner groups

The GURU of Group can revive removed owner groups. To do so first you have to make the owner group visible in the owner group table. You can do it using the "**A**" button in the upper right corner of the table.

Then you have to select the particular owner group and select "**Revive object**" in the context menu (invoked by right mouse click)



21 Experiments

21.1 In brief

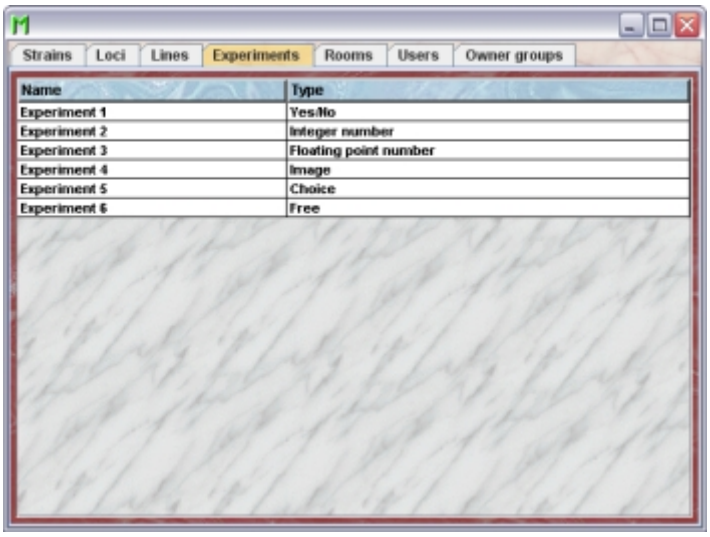
You can use Mausoleum also to store experimental results for your mice. Of course you can also store such information in the comment field of mice. But that leads to an accumulation of unreadable and unstructured data which can hardly be found later. To avoid such an accumulation of unstrucured result data Mausoleum provides the Experiment objects which lets you define the expereiments which are carried on in your lab. In addition for each experiment you specify the type of results you expect. These types are available:

- **Yes/No**: This type of experiment might be used for simple yes/no observations. Some people like to use this type of experiment to store a special treatment of the mice.
- **Integer number**: Integer numbers are expected for experiments where something is counted or a attribute of a treatment is stored.
- **Floating point number**: Here you can enter arbitrary numbers. A simple example for such an experiment is weihing of mice.
- **Choice**: In such experiments the user can select from a given set of possible results. An example could be the fur color.
- **Free**: For experiments defined as "Free" anything can be typed in as a result. This of course gives a maximum of freedeom but makes it really difficult to handle the results later on. You should restrict this type to experiments where really noen of the other types is applicable.
- **Image**: This type wil ask for images as a result.
- **Location**: A very special type of experiment. Possible result are GPS-coordinates. It was introduced to store the information where wild living animals were catched. Most labs won't use this type.

After you have defined experiments you can enter experimental results for your mice in a structured and searchable manner which makes further evaluation of your results easy. How to store and retrieve experimental results is descriibed **here**.

21.2 The Experiment table

By clicking "**Experiments**" in the object selection field of the Inspector you will get a window with the table of all actually defined experiments of the group.



Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the experiments should be shown in this table. These attributes are available for the experiment table:

Column header	Description	Sortable	Filterable	Colorable
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Name	Name of the experiment	X		
Type	Type of the experiment	X	X	
end	The end date of the object	X		
start	The start date of the object	X		

21.2.1The Experiment inspector

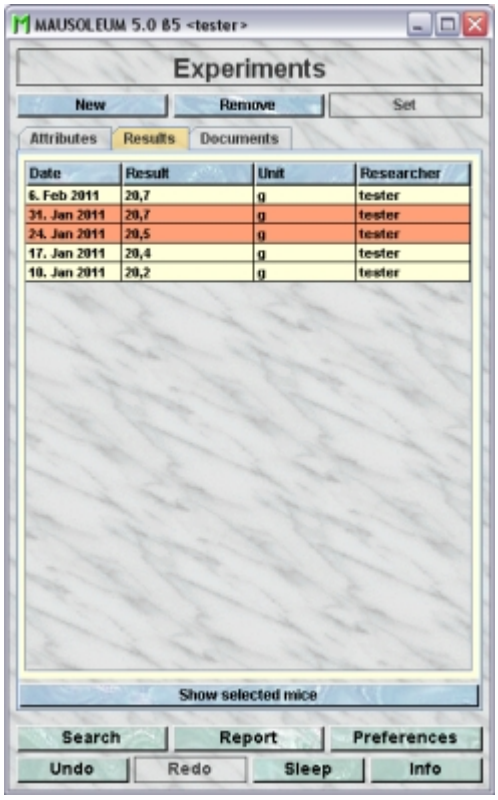
The experiment inspector is active as soon as the experiment table becomes the active table. It will adopt to the attributes of the selected experiment and lets the user modify the attributes if the user has sufficient privileges to do so. The experiment inspector has three tabs

21.2.2The "Attributes" tab

It shows the attributes of the experiment:

- **Name**:The name of the experiment. It can be changed by the GURU of the group
- **Type**: The type (number, text or image etc.) of the results to expect from this experiment. This attribute cannot be changed
- **Values**: The possible range of result values of the results to expect from this experiment if applicable. This attribute cannot be changed.
- **entered by**: The name of the user who entered the selected experiment. This attribute cannot be changed
- **Description**: In this field the GURU can type in a more thorough description of the selected cohort. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one object is selected.

21.2.3The "Results" tab

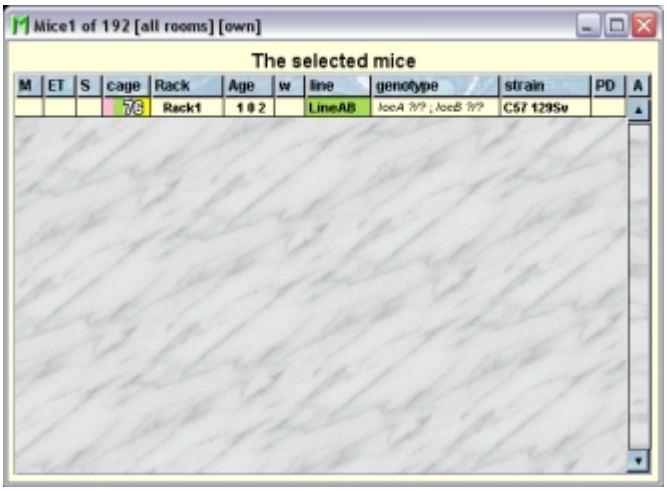


It shows the results for the selected Experiment which are set in the set of active mice. Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the results should be shown in this table. These attributes are available for the result table:

Column header	Description	Sortable	Filterable	Colorable
Date	Date of the result	X		
ET	Eartag	X		
Experiment	Name of the experiment	X	X	
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Researcher	The name of the person who performed the experiment	X	X	
Result	The result	X		
Unit	The unit	X		
end	The end date of the object	X		
mouse ID	The system ID of the mouse	X		

start	The start date of the object	X		

In this table you see the results for the selected experiments. You don't see the individual mice for which these results were set. To generated a mouse table where you can see the associated mice you click the button "**Show selected mice**" and a window with a table containing the mice will open:



21.2.4The "Documents" tab

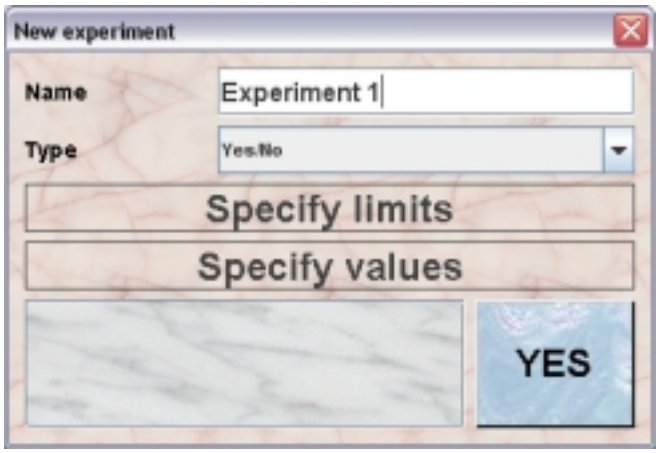
This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the experiments of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after

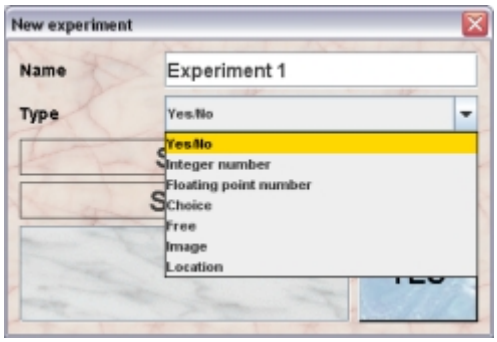
congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

21.3 Adding experiments

Only GURUs can add and remove experiments. To add a new mouse strain you click "**Experiments**" in the object selection field of the inspector. The table of experiments opens. In the Experiment-inspector you click the "**New**"-button. A dialog appears in which you can specify the attributes of the new experiment.



First you will specify the name for the experiment. Then you have to specify the type of results you expect from the new experiment. You select it from the selection field below the name field.



These types are available:

- **Yes/No**: This type of experiment might be used for simple yes/no observations. Some people like to use this type of experiment to store a special treatment of the mice.
- **Integer number**: Integer numbers are expected for experiments where something is counted or a attribute of a treatment is stored.
- **Floating point number**: Here you can enter arbitrary numbers. A simple example for such an experiment is weihing of mice.
- **Choice**: In such experiments the user can select from a given set of possible results. An example could be the fur color.
- **Free**: For experiments defined as "Free" anything can be typed in as a result. This of course gives a maximum of freedeom but makes it really difficult to handle the results

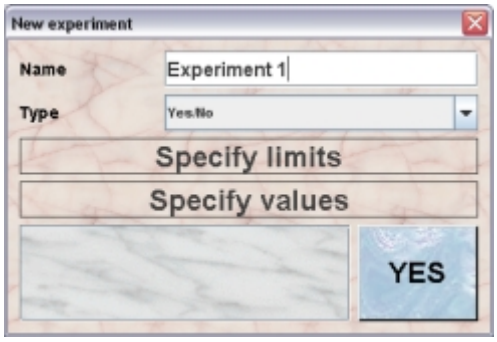
later on. You should restrict this type to experiments where really noen of the other types is applicable.

- **Image**: This type wil ask for images as a result.
- **Location**: A very special type of experiment. Possible result are GPS-coordinates. It was introduced to store the information where wild living animals were catched. Most labs won't use this type.

Depending on the type you selected the dialog will ask you to specify additional informations.

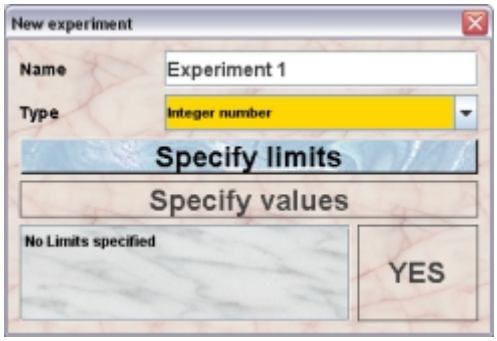
Dialog for a new "Yes/No" experiment

For the "Yes/No" experiments no additional information is needed

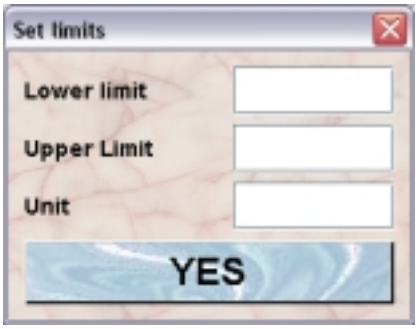


Dialog for a new "Integer number" experiment

For the "Integer number" experiments you have to specify lower and upper limit of the expected results.

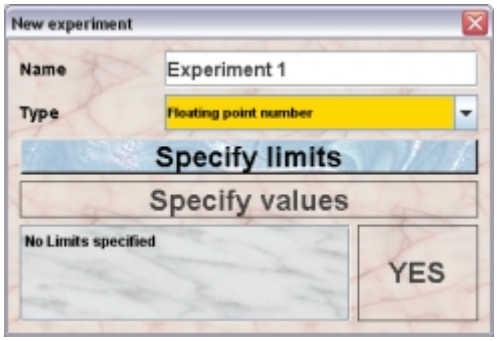


You click on the "**Specify limits**"-button and a dialog opens where you can set lower and upper limit of the expected results for the new experiment. You can also specify a unit for the values.

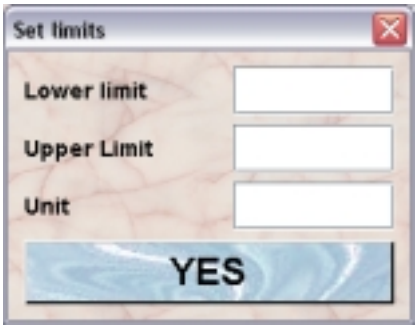


Dialog for a new "Floating point number" experiment

For the "Floating point number" experiments you have to specify lower and upper limit of the expected results.

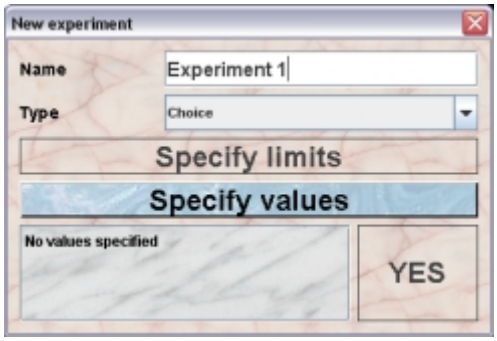


You click on the "**Specify limits**"-button and a dialog opens where you can set lower and upper limit of the expected results for the new experiment. You can also specify a unit for the values.

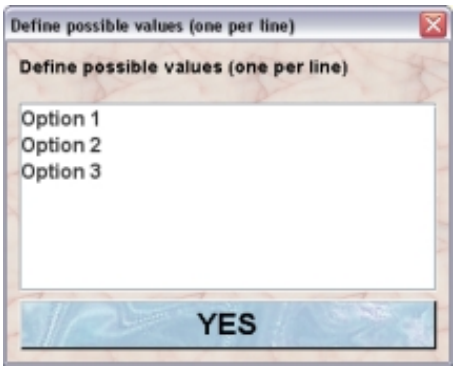


Dialog for a new "Choice" experiment

For the "Choice" experiments the set of potential results is needed.

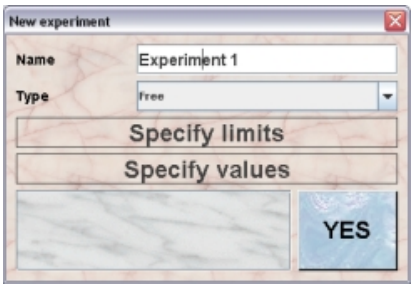


You click on the "**Specify values**"-button and a dialog opens where you can type in the potential results of this experiment. Each line in this text area will specify one potential result.



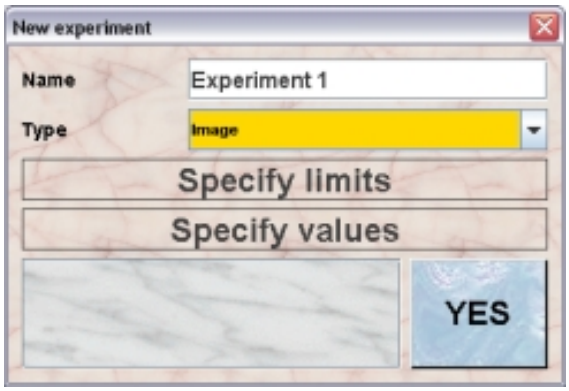
Dialog for a new "Free" experiment

For the "Free" experiments no additional information is needed because the user will type in any text describing the result when entering a result later on.



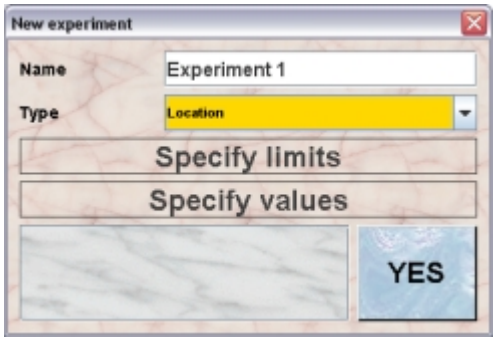
Dialog for a new "Image" experiment

For the "Image" experiments no additional information is needed.



Dialog for a new "Location" experiment

For the "Location" experiments no additional information is needed.



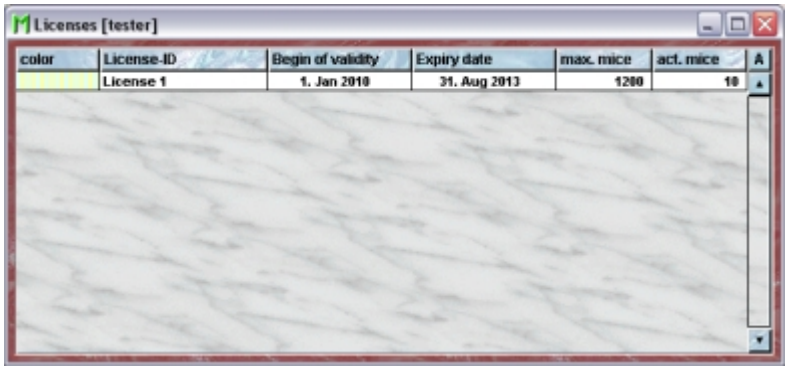
22 Licenses

22.1 In brief

The licenses represent legal licenses which allow to keep and to work with a specified number of mice. Mice can be assigned to a valid license and you will always keep track how much of the license is used up and how many mice can still be used in your lab.
Assignment of mice to a license can be restricted to a defined set of users.

22.2 The License table

After clicking "**Licenses**" in the object selection field of the inspector you will get the table with all active licenses.



Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the loci should be shown in this table. These attributes are available for the license table:

Column header	Description	Sortable	Filterable	Colorable
Begin of validity	Date from which the license is valid	X		
Expiry date	Date until which the license is valid	X		
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
License holder	The holder of the license	X		
License-ID	The ID or name of the license	X		
Users	Name of users with permission for this license	X		
act. mice	Actual number of mice registered for this license	X		

color	The color of the license	X		
comment	The comment for this License	X		
died	Number of died mice	X		
end	The end date of the object	X		
exported	Number of exported mice	X		
max. mice	Maximum of mice covered by this license	X		
rem. mice	Remaining number of mice for this license	X		
sacrificed	Number of sacrificed mice	X		
start	The start date of the object	X		

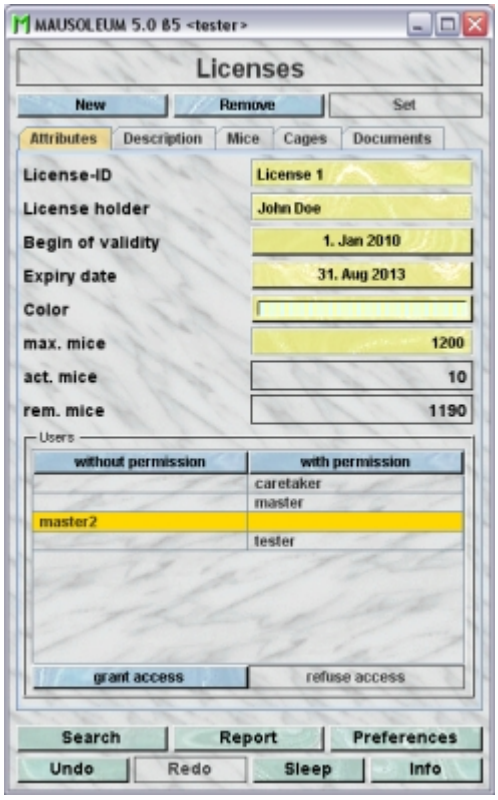
In the license table a GURU can specify whether only the active licenses should be displayed in the table or also the inactivated licenses. To switch between these display modes you use the little "**A**" button in the top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

22.3 The License inspector

The license inspector is active as soon as the license table becomes the active table. It will adopt to the attributes of the selected license and lets the user modify the attributes if the user has sufficient privileges to do so. The license inspector has five tabs

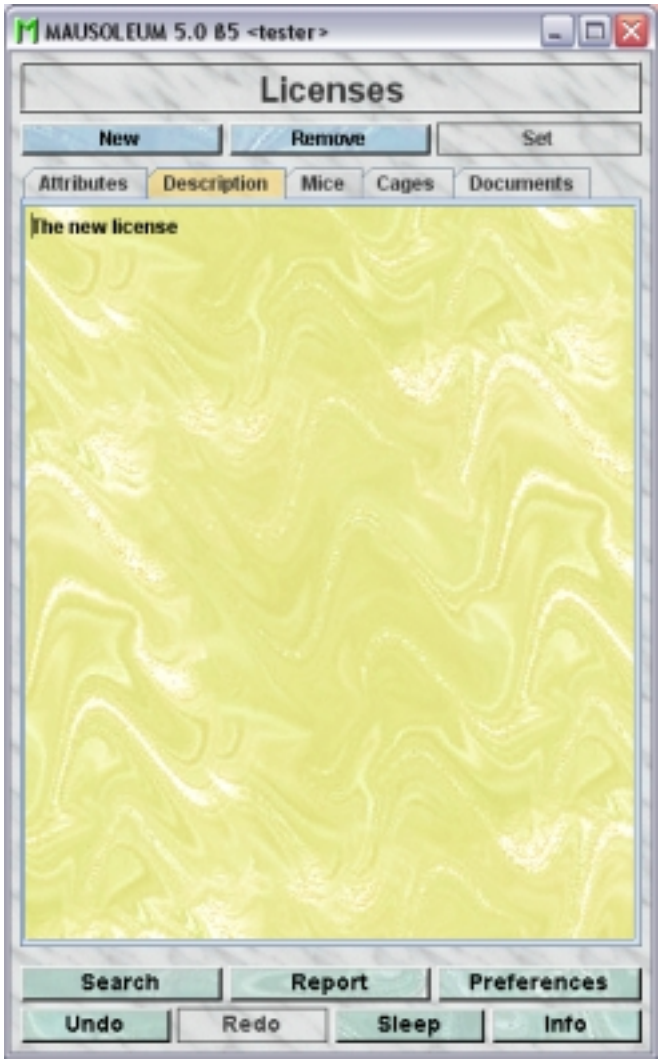
22.3.1The "Attributes" tab



It shows the attributes of the license:

- **License-ID**:The name or official ID of the selected license.
- **License holder**: The proper name of the official holder of the selected license-
- **Begin of validity**: The date at which the selected license became valid and mice can be assigned to.
- **Expiry date**: The date at which the selected license becomes invalid and mice cannot be assigned to any longer.
- **Color**:The GURU can assign a color to a licnese. Both plain colors and color patterns can be used. A description of the Color choose dialog can be fond **here**.
- **max mice**: In this field you can see end edit the number of mice which are granted by the seleted license. Only the GURU can change that number. Nevertheless it shouldn't change. If this number is changed you will get a mouse pope alert.
- **act. mice**: Shows the number of mice which have been registered to this license. It cannot be changed here. This number changes whenever mice are added to the respective license automatically.
- **rem. mice**: Shows how many mice can still be registered to this license until the maximum number is reached. It cannot be changed here. This number changes whenever mice are added to the respective license automatically.
- **Users**: In this table you see all users of this group listed who potentially could assign mice to this license. Potential users are GURUs, MASTERs and CARETAKERs. GURUs and CARETAKERs can always register every mouse to a license For MASTERs the access to the selected licenses can be granted or refused using the buttons "**grant access**" and "**refuse access**".

22.3.2The "Description" tab

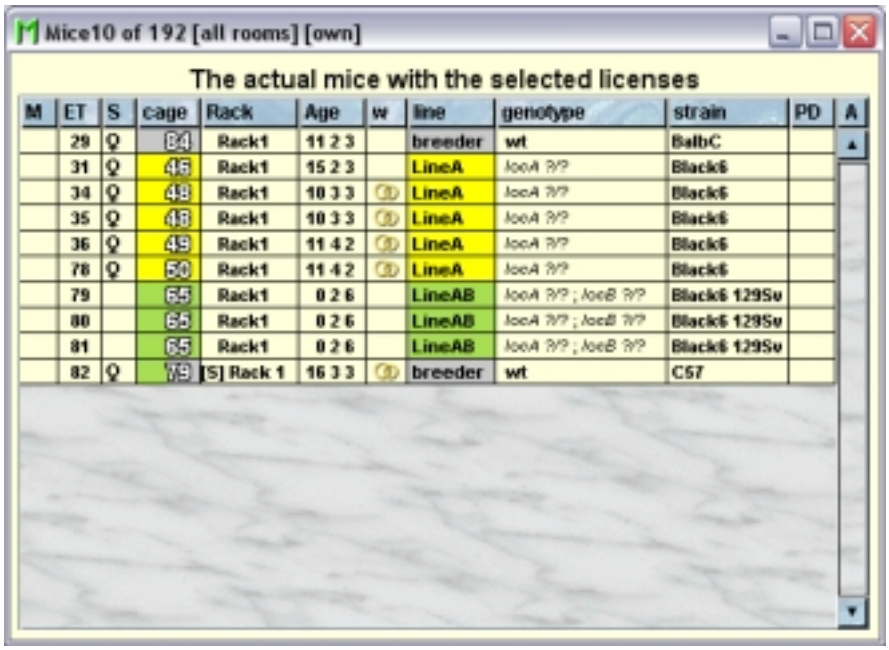


In this tab you can use the text field to enter a more thorough description of the selected license. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one license is selected.

22.3.3The "Mice" tab

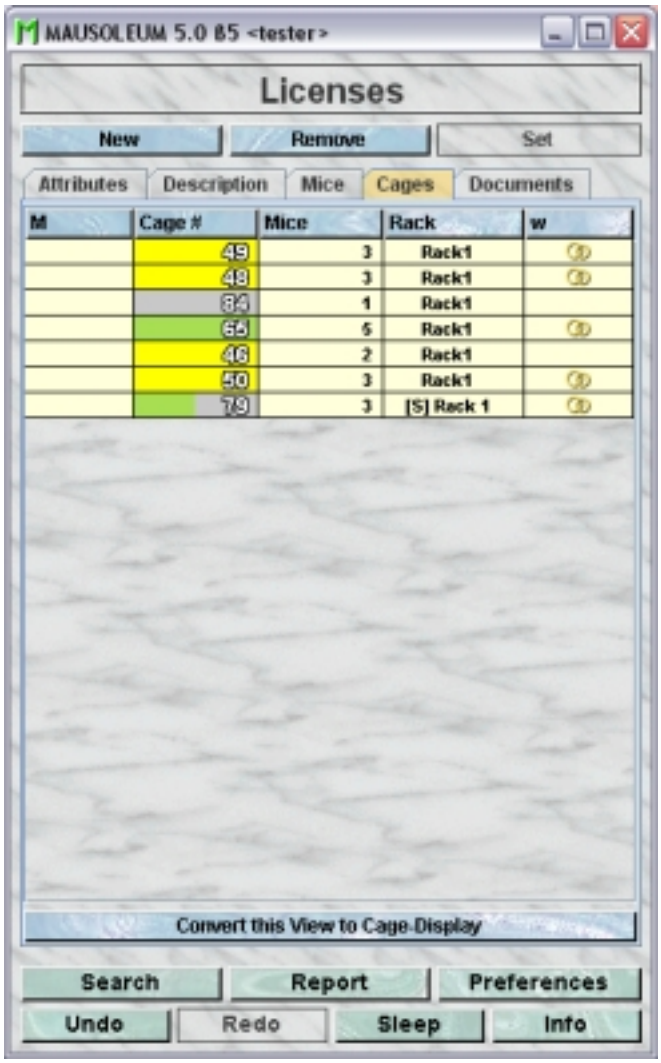
In this tab you see a table with the mice which belong to one of the selected licenses.

Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containg the mice will open:

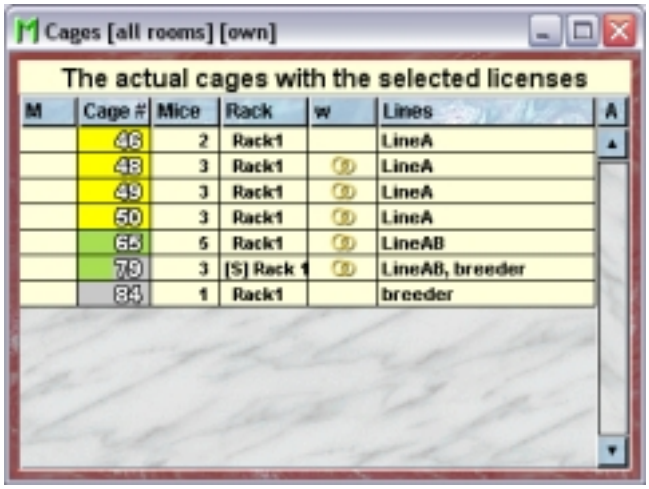


22.3.4The "Cages" tab

In this tab you see a table with the cages which contain mice which belong to one of the selected licenses.



Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cage table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



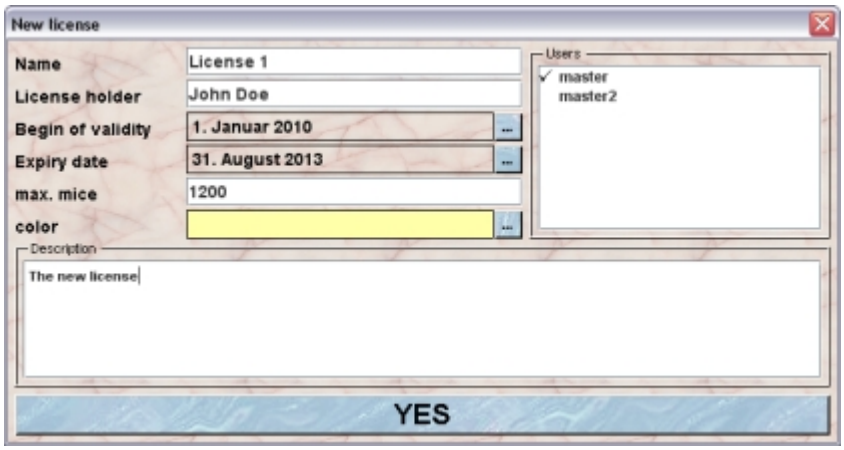
22.3.5The "Documents" tab

This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the licenses of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

22.4 Adding Licenses

Only GURUs can add new licenses. To add a license you click on "**Licenses**" in the object seleciion field of the inspector. After clicking "**New**" in the license inspector you can specify the attributes of the new license.



Enter the name or official License-ID and the proper name of the official license holder. You set the dates by clicking the little "**...**"-button at the right side of the respective field. You will get a dialog for selecting the date:

Type in the maximum number of mice granted by the new license. You can set a color for this license by clicking the little "**...**"-button at the right side of the respective field. Both plain colors and color patterns can be used. A description of the Color choose dialog can be fond **here**.
Ath the right side of the dialog you find a list of the MASTER user of your group. GURUs and CARETAKERs can always register every mouse to a license For MASTERs the access to the selected licenses can be granted or refused. Grant or refuse access to a MASTER user by clicking on the name. Users who are allowed to use this license are shown with a checkmark in front of their name.
You can type in a description of the license in the big text field at the bottom of the dialog.

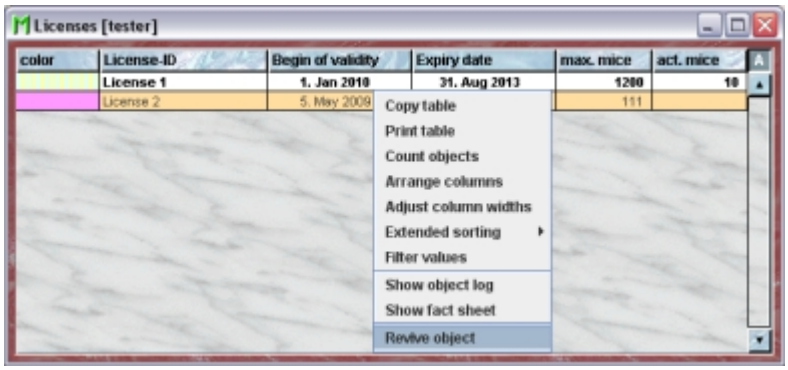
22.5 Removing licenses

Only GURUS can remove licenses. Removing a license will not remove it from the database. It merely becomes invisible to the users and cannot be selected for a mouse anymore. But mice assigned to this license keep it even if it was removed.
To remove a particular license select it in the license table and click the "**Remove**"-button in the license inspector. If you answer the security dialog with "**YES**" the license will become invisible.

22.6 Reviving licenses

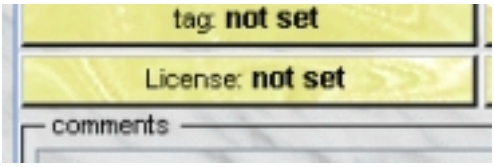
The GURU of Group can revive removed licenses. To do so first you have to make the license visible in the license table. You can do it using the "**A**" button in the upper right corner of the table.

Then you have to select the particular license and select "Revive object" in the context menu (invoked by right mouse click)

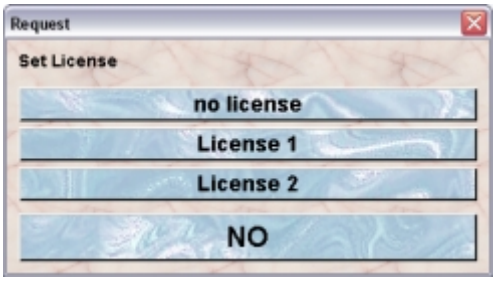


22.7 Registering mice

If licenses are defined you can register mice for a specific licenses if your privileges are sufficient and you are allowed to set a specific license (see above). In oreder to do register mice to a sepcific license you select the repsctive mice in a mouse table and click in the "Attributes"-tab of the mouse inspector the "**License**"-button:



A dialog will appear allowing you to set or to clear the license for the selected mice. You have the choice between the active licenses of the group. This choice will be presented as dropdown list or as buttons if less than 5 items are available.



You can also select "**no license**" indicating that this mouse will not be counted for any legal license.

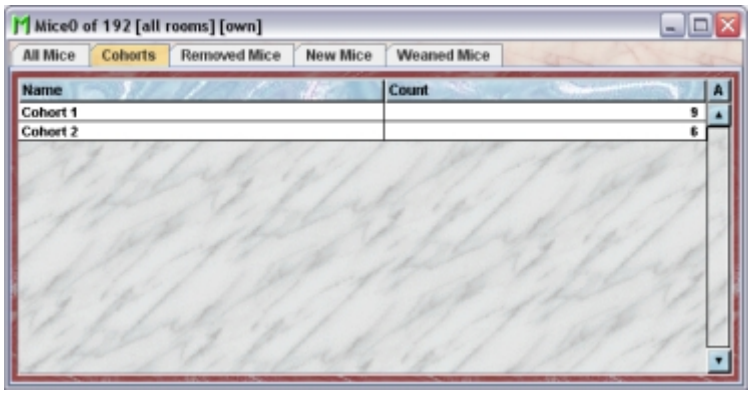
23 Cohorts

23.1 In brief

Mouse cohorts are groups of mice which you want to group together according to any criteria you like. The mouse cohorts give you the opportunity to check what happened to this mouse group after whatever timespan even if the animals are already dead. The mice which are members of a cohort don't need to be relatives or connected by any other attribute. You can e. g. group mice in a cohort because they got a special treatment.
Mice can be members of several cohorts. You can always see the cohorts the mouse belongs to or which mice belong to given cohort. Membership to a cohort can be inheritable. Inheritance is an attribute of a cohort and therefore you can create different cohorts where membership in one is inheritable whereas it is not in other cohorts.

23.2 The Cohort table

By clicking "**Cohorts**" in the object selection field of the Inspector you will get a window with the table of all actually defined cohorts of the group. The table will be shown in the mouse window:



Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the cohorts should be shown in this table. These attributes are available for the cohort table:

Column header	Description	Sortable	Filterable	Colorable
Color	The color of the cohort	X		
Count	The count of contained objects	X		
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Inheritable	indication whether or not membership to the cohort is inheritable	X		

Name	The name of the cohort	X		
end	The end date of the object	X		
start	The start date of the object	X		

In the cohort table a GURU can specify whether only the active cohorts should be displayed in the table or also the inactivated cohorts . To switch between these display modes you use the little "**A**" button in the top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

23.3 The Cohort inspector

The cohort inspector is active as soon as the cohort table becomes the active table. It will adopt to the attributes of the selected cohort and lets the user modify the attributes if the user has sufficient privileges to do so. The cohort inspector has two tabs

23.3.1 The "Attributes" tab

It shows the attributes of the cohort:

- **Name**:The name of the cohort. It can be changed by the GURU.

- **Color**: The GURU can assign a color to a cohort. It is very convenient to assign colours such that cohort can be discerned or grouped. Both plain colors and color patterns can be used. A description of the Color choose dialog can be fond **here**.
- **Inheritable**: Shows whether or not membership in this cohort is inheritable or not. By clicking this buitton the GURU can invoke a dialog to specify this attribute.
- **Description**: In this field the GURU can type in a more thorough description of the selected cohort. Remember that you have to use the "**Set**"-button to transmit the changes in this field to the database. It is not possible to edit the comments if more than one object is selected.

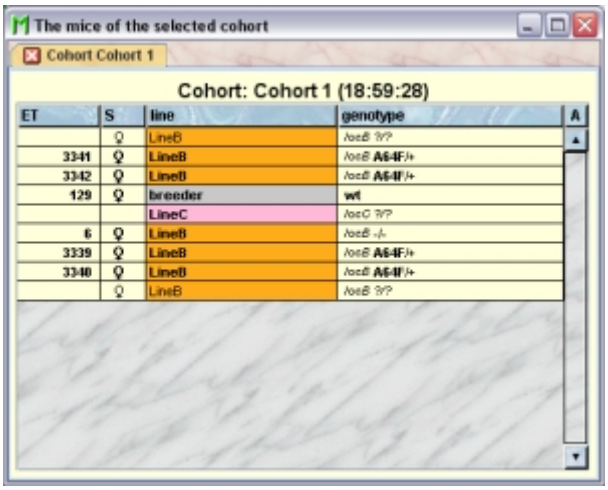
23.3.2 The "Documents" tab

This tab lets you store and exchange documents like pdf- or Word-files with additional informations about the cohorts of your group. In this tab you will find a list with the document which have been uploaded to the server.

GURUs can add new documents for the selected objects by clicking the "**Add**"-button beneath the documents list. You will be asked for the location of the document and after congfiming this dialog the file is uploaded top the server and will be displayed in the list. GURUs can also remove documents by selecting one of the documents in the list and clicking the "**Remove**"-button beneath the documents list. You can download a document and store it on your client computer by clicking the "**Download**"-button.

23.4 The actions

In the "Actions" area of the inspector you find the "**Search mice**"- button which initiate a serch for the members of the selected cohorts. The resulting mouse table will be shown in a separate window:



If more than one cohort was selected the mice of each selected cohort will be shown in separate tabs of this window.

23.5 Adding Cohorts

A GURU can add new cohorts. To do so select "Cohorts" in the object selection field of the Inspector. After clicking the "New"-button in the inspector you will be asked for the name of the cohort:

After typing the name of the new cohort you confirm the dialog by clicking "**YES**" and the new cohort will be created in the database.

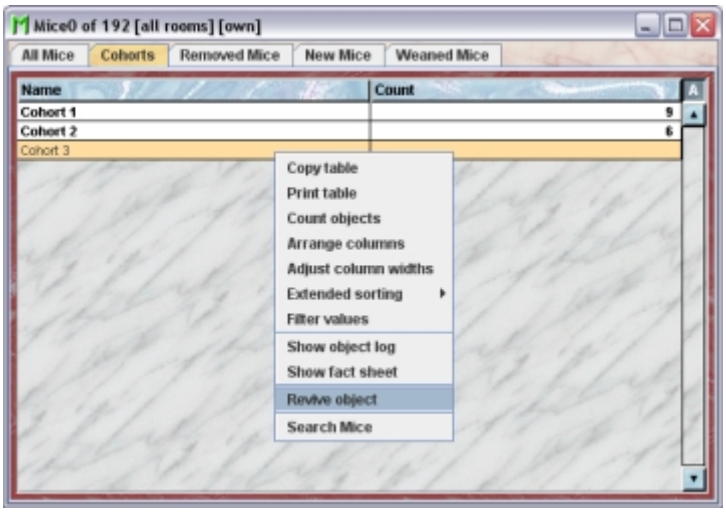
23.6 Removing Cohorts

Only GURUS can remove cohorts. Removing a cohort will not remove it from the database. It merely becomes invisible to the users and cannot be selected as a cohort for a mouse anymore. But mice belonging to the respective cohort will keep it even if it was removed.
To remove a particular cohort select it in thecohort table and click the "**Remove**"-button in the cohort inspector. If you answer the security dialog with "**YES**" the cohort will become invisible.

23.7 Reviving Cohorts

The GURU of Group can revive removed cohorts. To do so first you have to make the cohort visible in the owner group table. You can do it using the "**A**" button in the upper right corner of the table.

Then you have to select the particular cohort and select "**Revive object**" in the context menu (invoked by right mouse click)


Mice0 of 192 [all rooms] [own]
All Mice
Cohorts
Removed Mice
New Mice
Weaned Mice
Name
Count
Cohort 1
9
Cohort 2
6
Cohort 3
Copy table
Print table
Count objects
Arrange columns
Adjust column widths
Extended sorting
Filter values
Show object log
Show fact sheet
Revive object
Search Mice

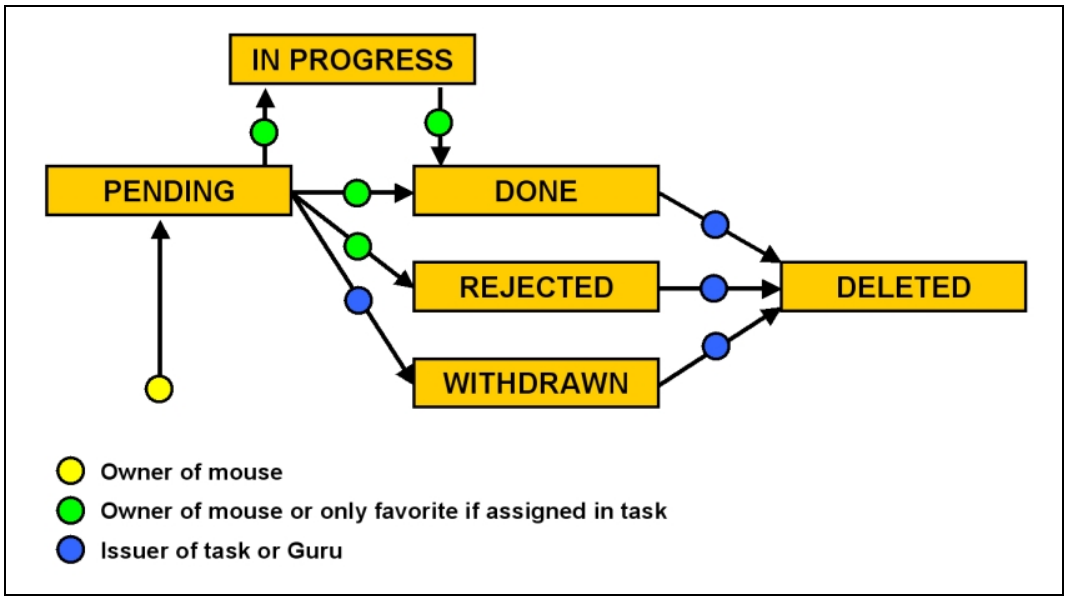
24 Tasks

24.1 In brief

Tasks in Mausoleum give you the opportunity to schedule jobs to be done. This can be used either as a reminder if you plan a certain procedure to be performed on a later date or you can plan your daily work in the mouse room right at your desktop. It also enables you to issue a task to be carried out by someone else. This can be either everyone who owns the specific mouse or a designated favorite whose skills you trust most. Using the Mausoleum task feature you can follow up whether and if so when and by whom this task was performed or whether it is already in progress.
A task in Mausoleum has one of these status:

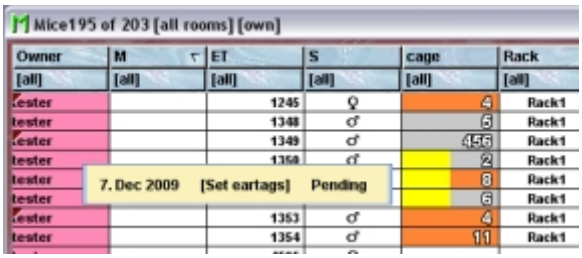
- **Pending**: The task is issued but no action has taken place so far
- **In Progress**: Someone is currently performing the task but it is time consuming and cannot be done in a single step
- **Done**: The task is finished
- **Rejected**: The task cannot be performed. The reason for it should be given in the comment field
- **Withdrawn**: The issuer can withdraw a task.
- **Deleted**: The task is deleted and not visibible any more.

The life cycle of a task is shown in this picture:



Life-cycle of Mausoleum tasks

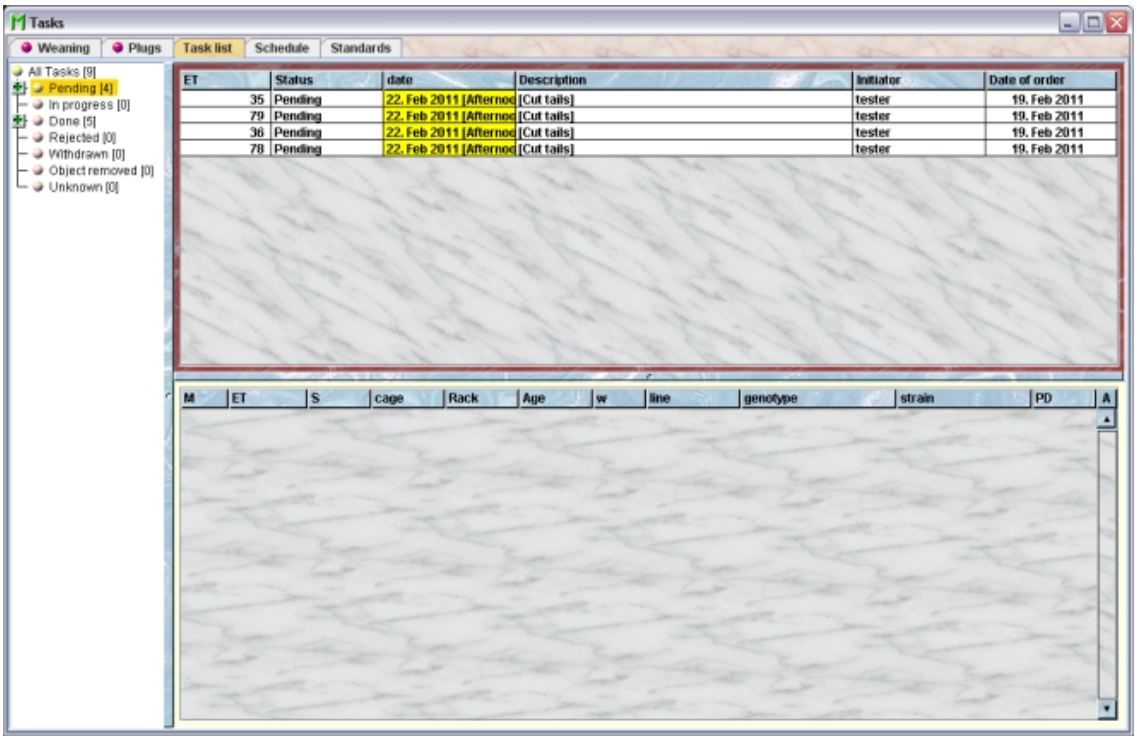
As you can see every owner of a mouse can issue a new task. This is done by selecting a mouse and clicking the "**Add task**" button in the mouse inspector.
A mouse with a task assigned to it has a red triangle in the first column of any mouse table.



If you move the mouse pointer over the respective line in the mouse table a little tooltip appears which shows the details of the tasks assigned to that mouse. You see the date, the type and the status of the task.

24.2 The Task window

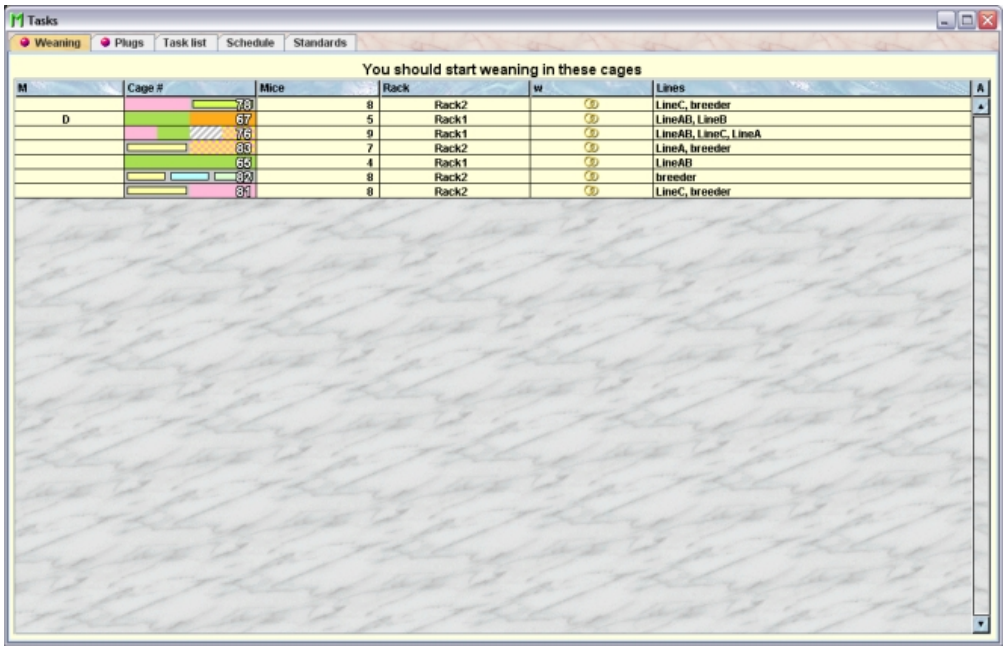
The task window will open automatically during log in if there are some alerts detected from the system or by clicking "**Tasks**" in the object selection field of the Inspector. The user will get a window with the table of all actually defined tasks and the other alerts for mice the user has sufficient privieleges to handle:



This window has up to five tabs from which the first two will show up only if there are alerts pending.

24.2.1 The "Weaning" tab

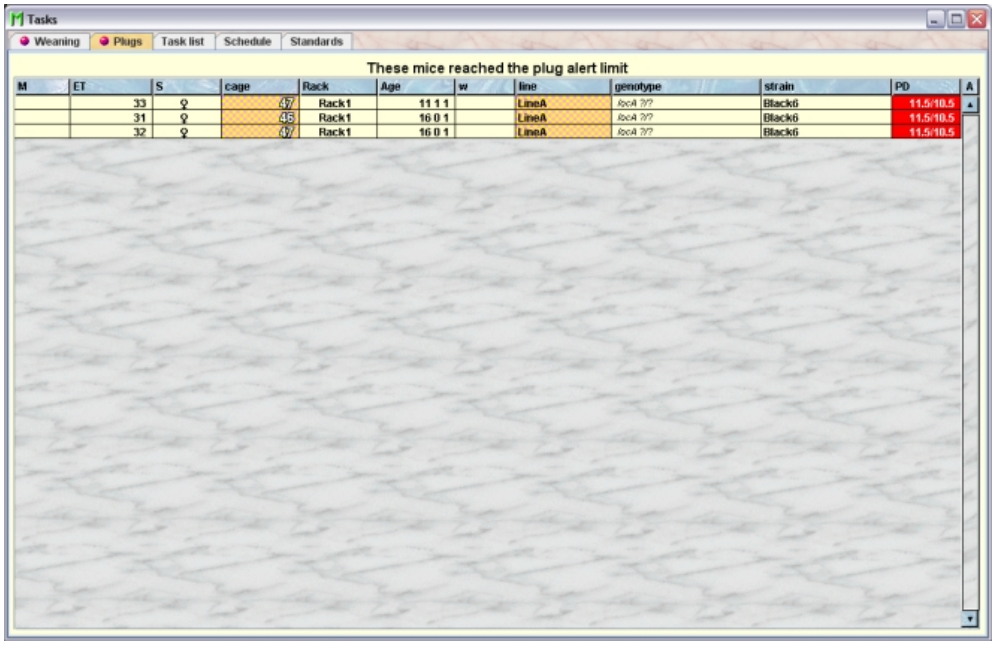
This tab will only appear if there are cages where pups should be separated from their parents. This check is done during startup of the program. If there are such cages this window willl automatically be shown after initalization.



This tab holds a table where you find all the cages in which you should start weaning. They will disappear from this list as soon as the pups are spearated from their parents

24.2.2 The "Plugs" tab

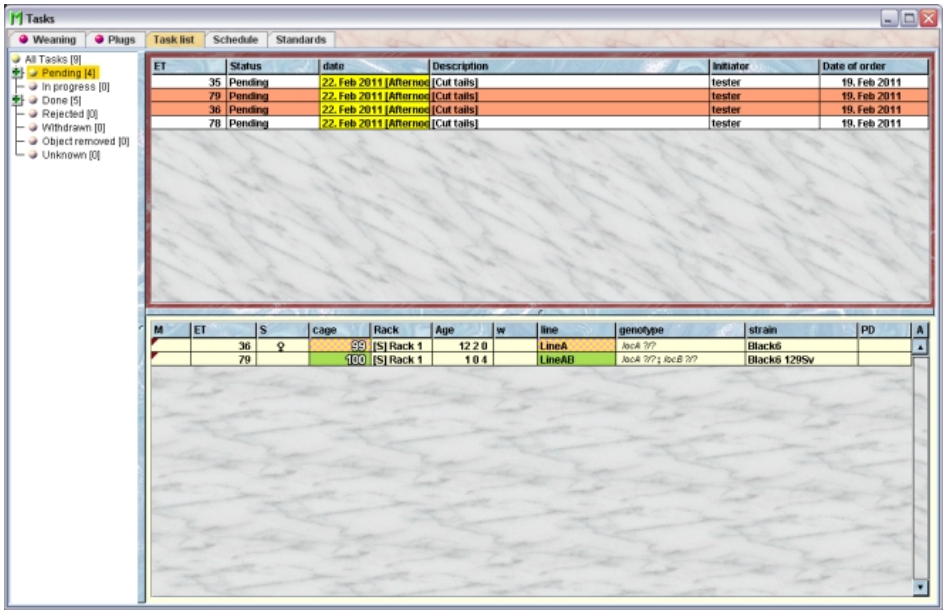
This tab will only appear if there mice where a plug alert has been set and the date at which the user wanted to be notified is today or in rthe past. This check is done during startup of the program. If there are such mice this window willl automatically be shown after initalization.



This tab contains a table where you can see all mice for which an plug alert has been set. Plug alerts can be set when a plug is registered for the mouse. While registering you can specify the embryonic day at which you want to be notified. If the plug alert is cleared the mice will disppaear from this list.

24.2.3 The "Task list" tab

This tab shows all task which have been set for the mice for which the user has sufficient privileges to handle.



On the left you see a tree view where all the tasks are grouped according to their status. There are two additional nodes which hold the task of unknown status (should actually never happen) and under "**Object removed**" the tasks for which the mouse has been removed from the set of active mice but the task wasn't finished yet. These tasks are listed here for the issuer of the task. Each node containing tasks has a plus or minus sign and can be "opened" to reveal all the tasks of this status.
If the user selects a status node the tasks with the respective status are shown in the task table in the upper right area of this window. Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the tasks should be shown in this table. These attributes are available for the task table:

Column header	Description	Sortable	Filterable	Colorable
Date of order	Shows the date, when this task was initiated	X		
Description	Description of the task	X	X	
ET	Eartag of the mouse	X		
Favorite	Shows the favorite user to perform this task	X	X	X
Finished at	Shows the date when the task was finished	X		
Finished by	Shows the name of the user who finished the task	X	X	X
Foreign key	Foreign ID from other system	X		

Group	Group name	X	X	
ID	The technical ID	X		
Initiator	Shows the name of the user who initiated this task	X	X	X
Rack		X	X	X
Status	Shows the status of this task	X	X	
Task ID	The ID of the task	X		
cage		X	X	X
comment	The comment	X		
date	Date for the task	X		X
end	The end date of the object	X		
start	The start date of the object	X		

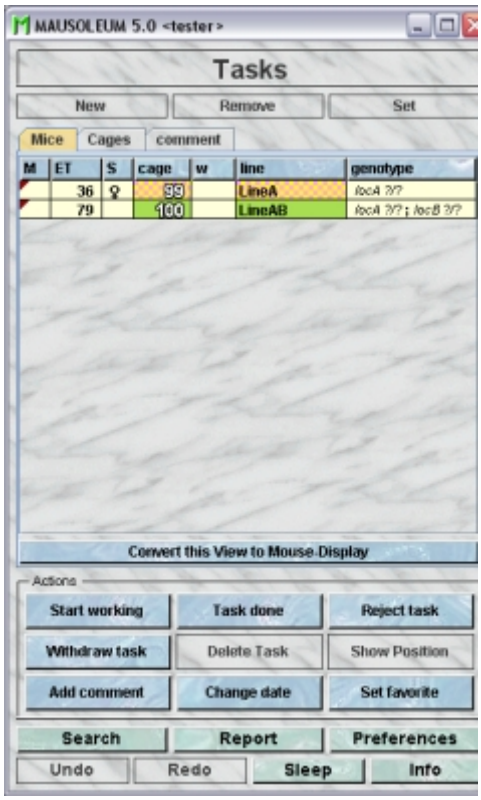
Below the task table you find a mouse table which shows the mice for which one of the selected tasks has been set.

24.3 The Task inspector

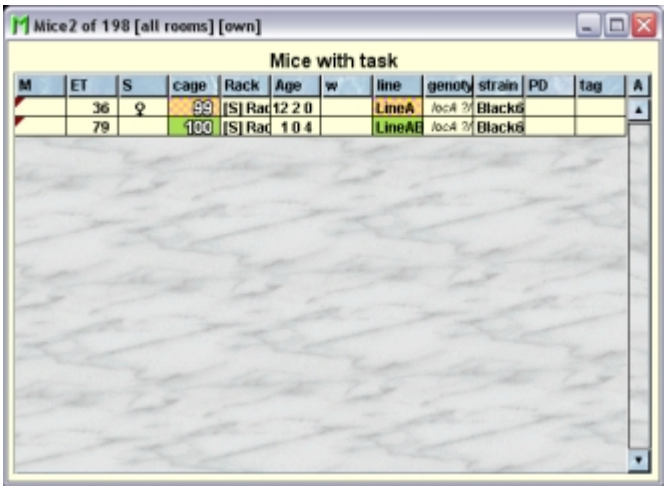
The task inspector is active as soon as the task table becomes the active table. It will adopt to the attributes of the selected task and lets the user modify the attributes if the user has sufficient privileges to do so. The task inspector has five tabs

24.3.1 The "Mice" tab

In this tab you see a table with the mice for which the selected task has been set.

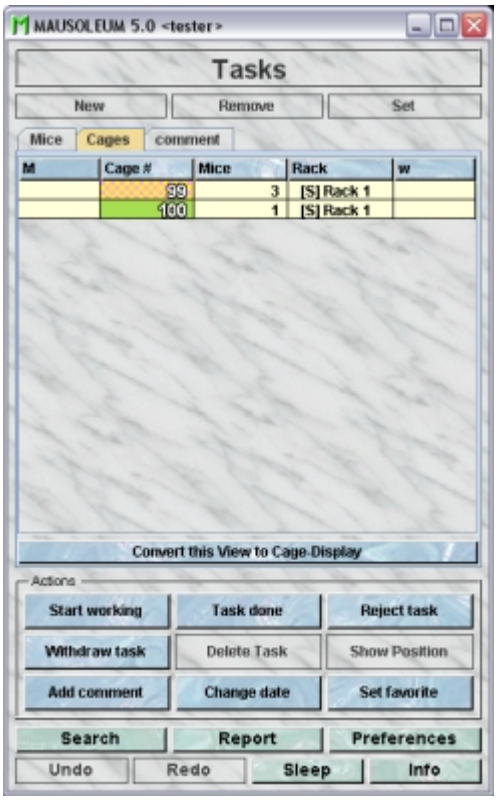


Because this table is within the inspector it cannot be used to modify the attributes of the displayed mice. To generated a mouse table which can be used to alter the attributes of the mice you click the button "**Convert this view to Mouse display**" and a window with a table containing the mice will open:

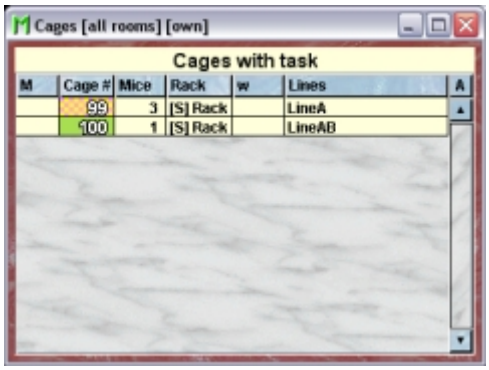


24.3.2The "Cages" tab

In this tab you see a table with the cages which contain mice for which the selected task has been set.



Because this table is within the inspector it cannot be used to modify the attributes of the displayed cages. To generated a cage table which can be used to alter the attributes of the cages you click the button "**Convert this view to Cage display**" and a window with a table containg the cages will open:



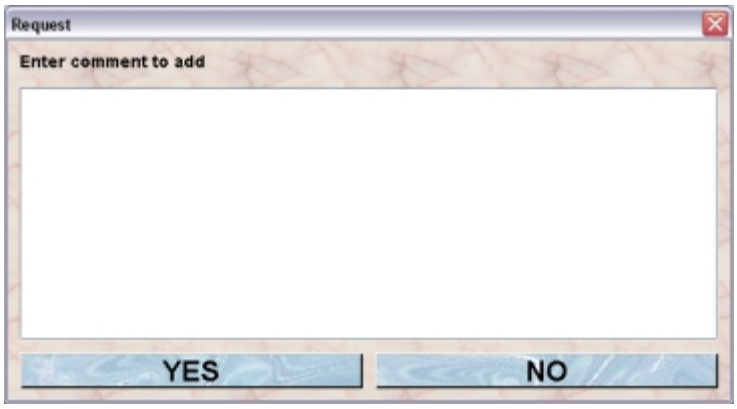
24.3.3The "comment" tab

In this tab you can the comments entered for the selected task. Comments are entered when the status of the task changes.

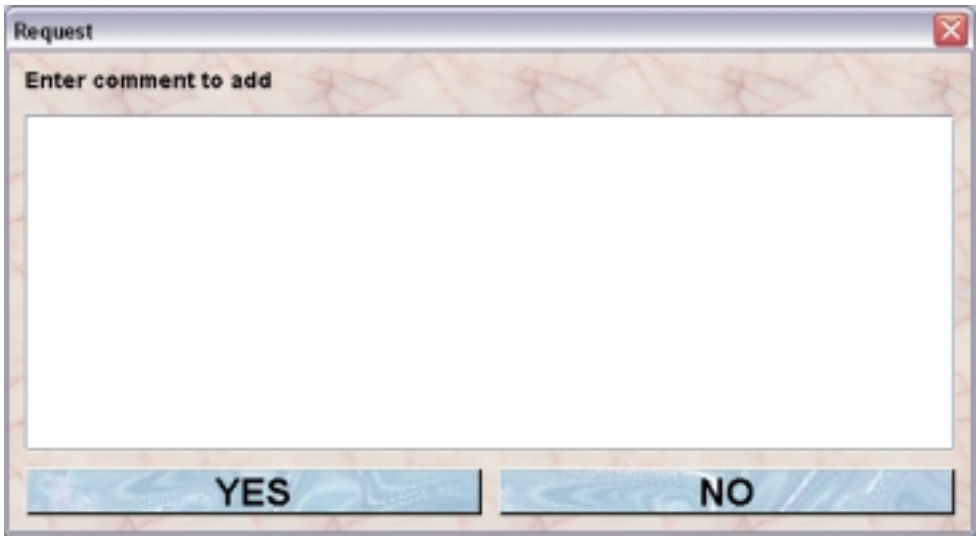
24.4 The actions

In the "Actions" area of the inspector you find several blue buttons which invoke various actions for modifying the selected tasks:

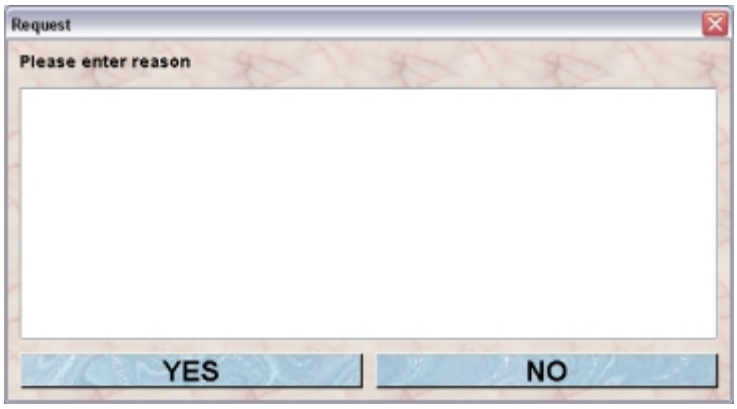
Start working: Sets the status of the selected tasks to "In progress" indicating that someone is currently performing the task but it is time consuming and cannot be done in a single step. A comment which will be added can be specified with this dialog:



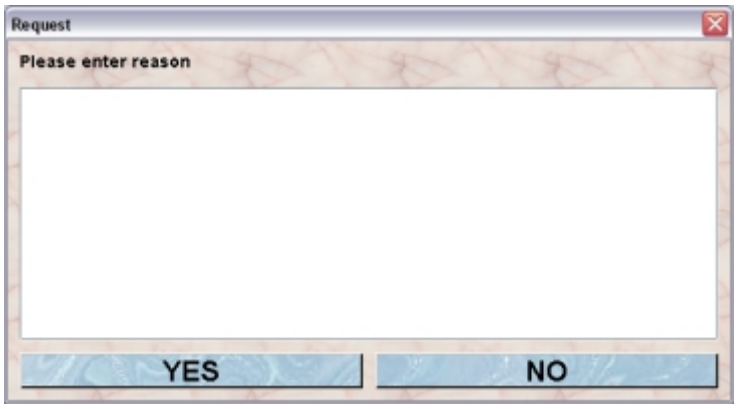
Task done: Reports the selected tasks as done and changes the status accordingly. A comment which will be added can be specified with this dialog:



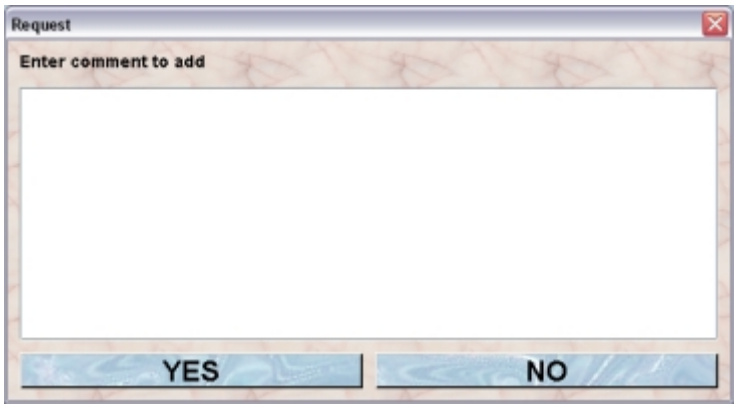
Reject task: This will used if the task cannot be performed. The reason for it should be given in the comment this dialog:



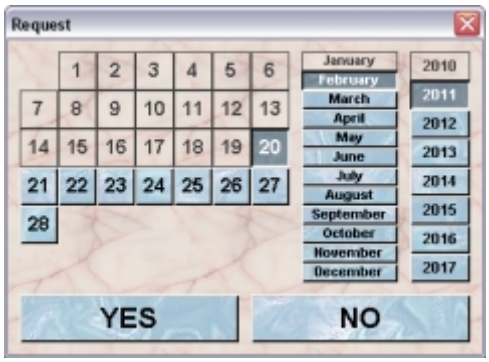
Withdraw task: The status of the selected task can be set to "withdrawn" by the issuer of the GURU of the group. This indictaes that for whatever reason there is nothing to do about it. The reason for teh withdrawal should be given in the comment this dialog:



Delete task: Tasks which have been finished, rejected or withdraen can be deleted from the list. They are also removed automatically after six weeks after have been set to a terminal status.
Show position: Opens the Racks view and flashes the cage where mouse of the selected task can be found.
Add comment: This action used for adding the same comment to one or several selected tasks.You type in the comment to add in the text area of this dialog and click the "YES"-button:

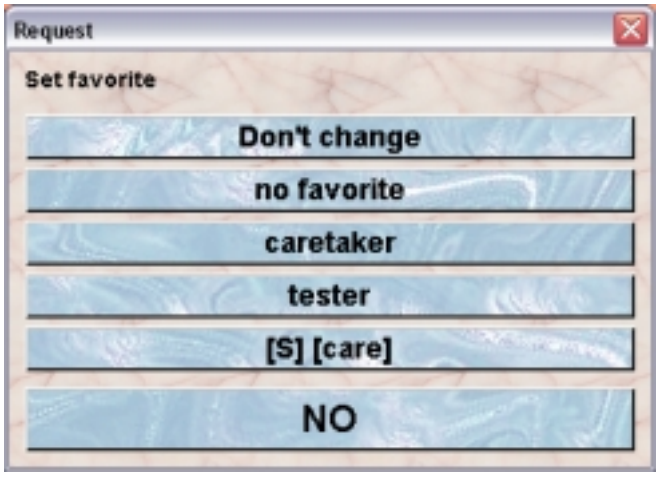


Change date: The issuer of the task and the GURU of the group can change the due date of the selected tasks.The new date is specified with the calendar dialog and you are asked to enter a reason for changing the date.



Set favorite: You can specify that a task should be carried out by specific use whose skills you trust most. You can change this setting with this action. After clicking this button you specify the wanted favorite with the following dialog. In this dialog you can also clear the setting for the favorite user bz selecting "**no favorite**" If you are using Mausoleum in an environment with shared racks and rooms and therefore the service group is used also the

caretakers of the service group can be set as favorite. In the choice these users are marked with an "**[S]**" as being members of the service group. This choice is presented as a set of buttons as shown below or as selection field if more than five options are present.



24.4.1Adding tasks

Every owner of a mouse can issue a new task. This is done by selecting a mouse and clicking the “Add task“ button in the mouse inspector:

In the next dialog you can specify the type of action and you can as an option select a favorite user, who should perform the task. You also have to specifz the date when the task should be performed A time preference (moring, noon etc.) can be set as an option.

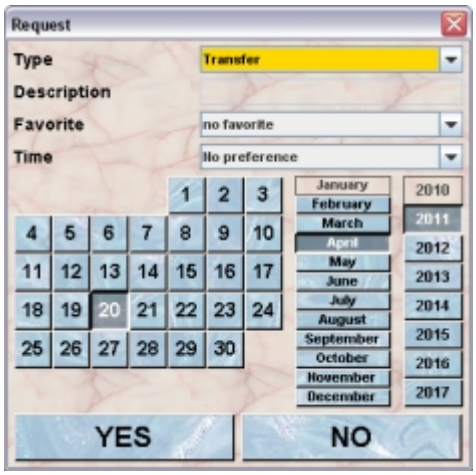
Type: Here you specify the type of the task. This can be either one of the standard procedures or any other job which then has to be specified. The standard procedures include e. g.:

- Set eartags
- Kill
- Cut tails

- Transfer to new cage

The nice thing about the standard tasks is that if possible the task will be automatically marked as done as soon as the respective operation is performed in the database. For example if the type of the task is “Set eartags” and you specify the eartag of the respective mouse you do not need to take care of the task. It is automatically marked as done. This does not apply for standard task like “Cut tails” which do not change the data of the mouse in the database.
The GURU of a group can extend the lst of standard tasks. This is useful if you have lab specific procedures. How to create new standard tasks is described **below**.

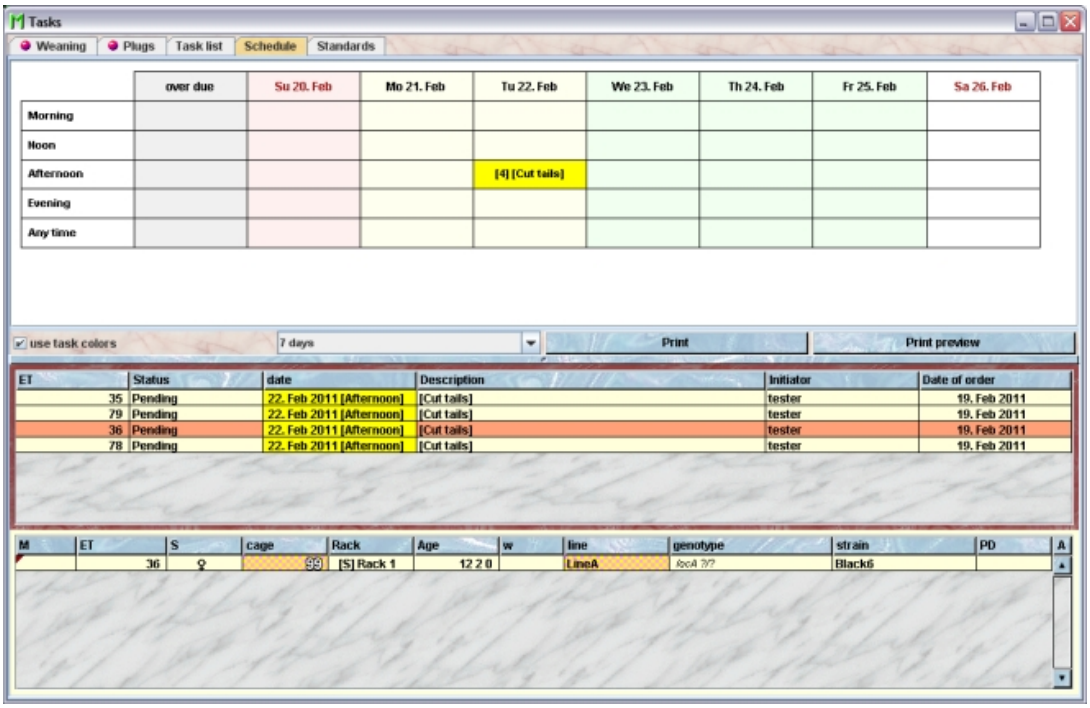
Description: If you have selected “**Other**” in the Type-selection you have to specify the type of the task manually. You will type in the desctiption in this field. Of course these tasks cannot be marked as done by the program and the user who has done the the job will have to tell the program when the task was finished. If you have selected any other type the "Description"-field is disabled as shown here:



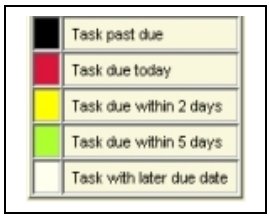
Favorite: If you want that the task should be performed by a specific person you can select here the user. In thsi selection field all possible users are presented. If you are using Mausoleum in an environment with shared racks and rooms and therefore the service group is used also the caretakers of the service group can be set as favorite. In the choice these users are marked with an "**[S]**" as being members of the service group.

24.4.2 The "Schedule" tab

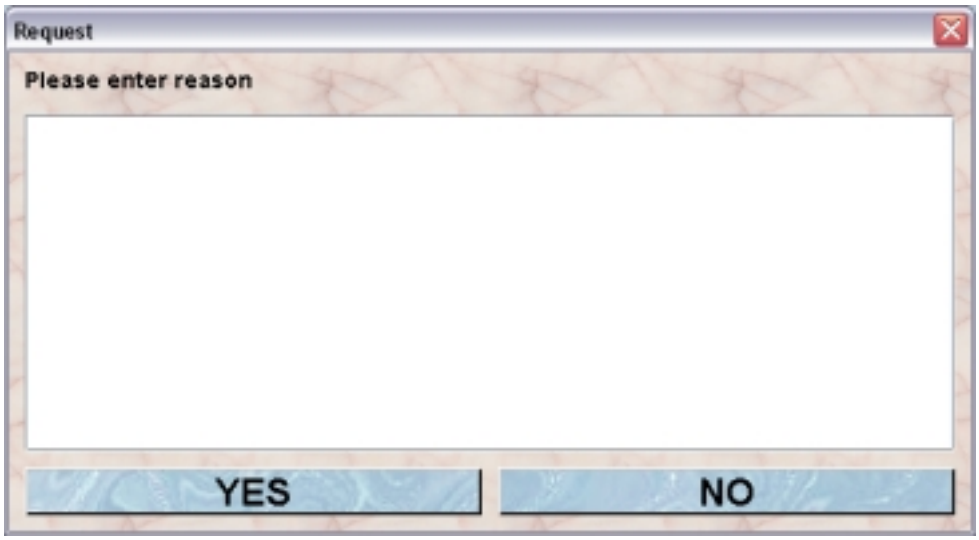
In the schedules tab you see on top a graphical representation of the scheduled tasks.



The task scheduled for the next days are shown as separate blocks according to the specifeid date and time preference. Tasks which are already over due are shown in the first column.
You can decide whether or not you want to use the task colors in this schedule. by selecting the checkbox "**use task colors**". White indicates a task in the future, green the task date is in 5 days, yellow in 2 days, red today and black shows that the tasks are past due.

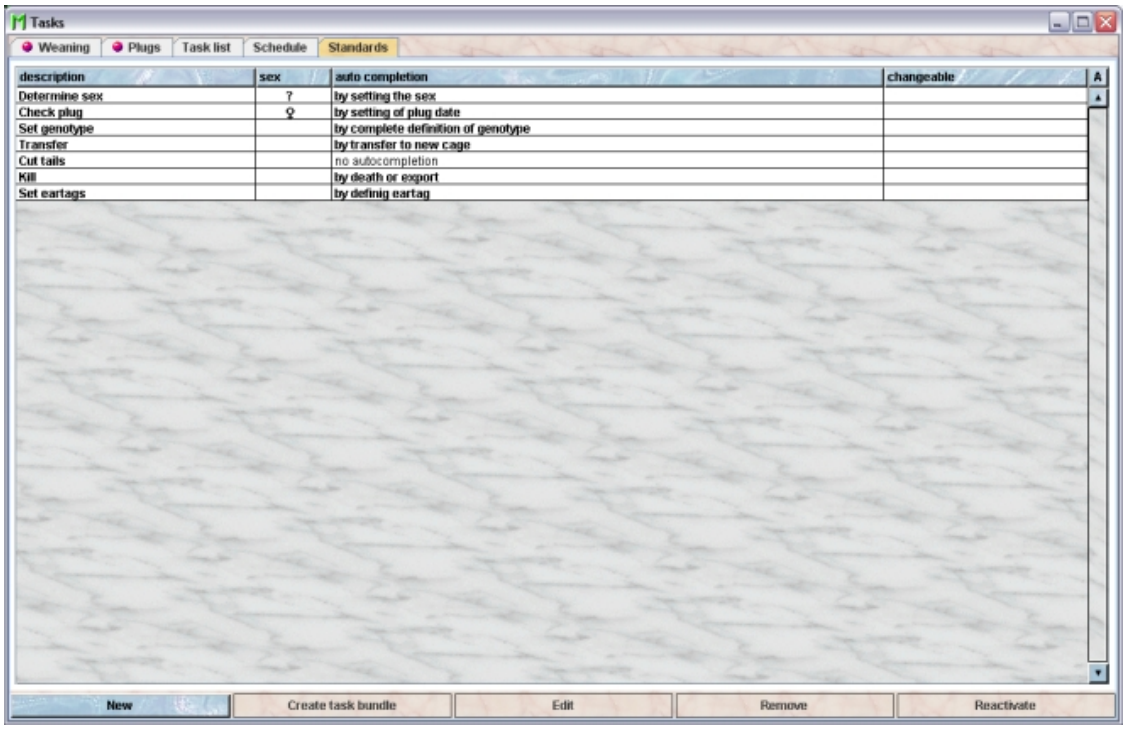


How many days should be shown is specified with the selection field right to the color checkbox.
In the lower part of this tab you find two tables the upper one shows the tasks you have selected in the schedule. The lower table shows the mice of the tasks which are selected in the task table directly above this table.
The issuer of a task or the GURU of a group can change the due date of a task. This can be done using the "**Change date**"-button in the inspector or more easily here in the schedule. You simply drag and drop the particular task to the new due date. After the drag and drop you should enter a reason for changing the tasks' date:



24.4.3 The "Standards" tab

In Mausoleum you have a bunch of predefined standard tasks. But there might also be the need for procedures which are specfic for your group. In this tab you see a table which contains the active standard tasks. These are the predefined system standard tasks as well as your lab specific standard tasks:



Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the standard tasks should be shown in this table. These attributes are available for the standard task table:

Column header	Description	Sortable	Filterable	Colorable
auto	Shows the action by which the standard	X	X	

completion	task is automatically finished			
bundle	Shows whether or not the standard task is a task bundle	X	X	
changeable	Shows whether or not the standard task is changeable	X	X	
description	The description of the standard task	X		
primary tasks	Shows the rpimary standard task of the bundle	X		
sex	Shows for which sex the standard task is possible	X	X	

In the standrad table a GURU can specify whether only the active standard tasks should be displayed in the table or also the inactivated standard tasks. To switch between these display modes you use the little "**A**" button in the top right corner of the table:

If this button is active (pressed) the GURU will see all objects of the group. The active objects are shown in bold whereas inactive objects are shown with in italics.

24.4.4Creating a new Standard task

You create a new group specific standard task by first selecting "**Tasks**" in the object selection field of the inspector, selecting the "**Standards**"-tab ind the task window and clicking on the "New"-button in the lower left corner of the "**Standards**"-tab (not in the inspector!). You specifiy attributes of the new standard task with this dialog:

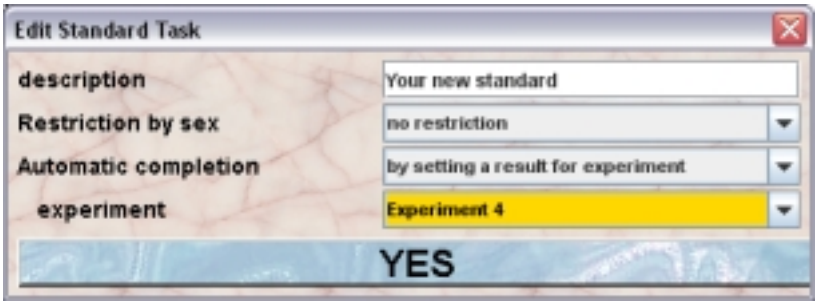
These attributes can be specified:

description: The name of the tasktype. This should be a really short description which the people in your group easily recognize.

Restriction by sex: You can specify whether this task can be set only for male, female or mice without defined sex. This flag will restrict the set of possible tasks if you want to add tasks for the selected mice in a mouse table.

Automatic completion: Here you can specify which action will automatically marks the task as finished. You have these options

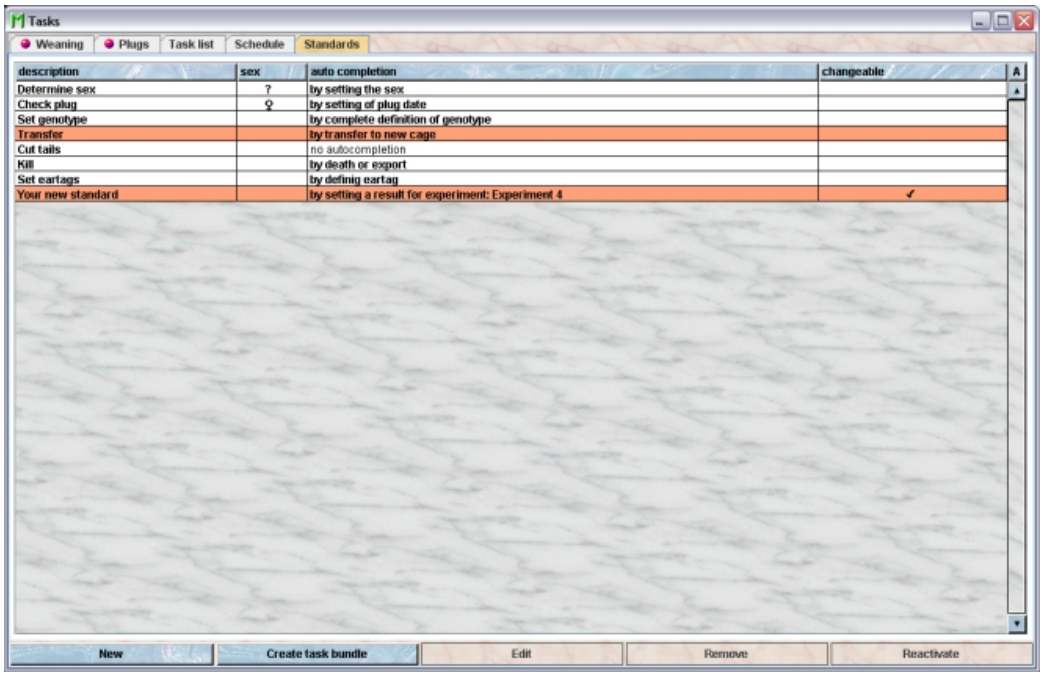
- no autocompletion: This indicates that no automatic completion of the task can take place and the user has to mark the task as finished manually
- by defining eartag: The task is marked as done when the mice receives an eartag
- by death or export: When the mouse is killed, sacrificed or exported the task is marked as done. The task will in this case be visible only for the issuer of the task.
- by transfer to a new cage: Any transfer to a new cage will mark this task as finished.
- by complete definition of genotype: If the genotype is completely defined the task will be regarded as finished. Partial definition of the genotype which is possible in Mausoleum is not sufficient.
- by setting of plug date: The task is finished if a new plug date is set for the mouse
- by setting the sex: Assigning the sex to a mouse will finish tasks of this type
- by transfer to a mating: Only a transfer to a mating cage will mark this task as finished
- by setting a result for experiment: The task is finished if a particular **experiment** has been performed and the **result was set** for the mouse. If you select this option you also have to specify the particular experiment you expect results for. If this option is chosen the selection field "experiment" is activated and lets you choose from the list of active experiments of the group:



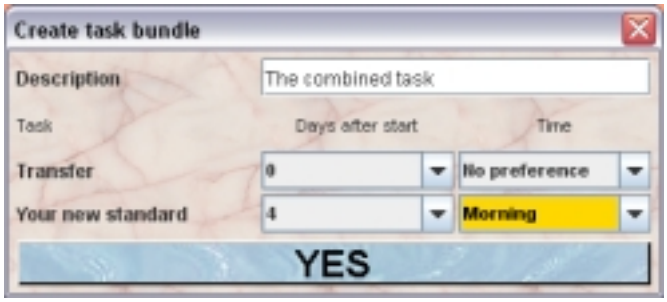
Clicking "**YES**" will create the new standard task which is then available for all users of the group who have sufficient privileges to add a task.
If you are using Mausoleum with the service group also the CARETAKERs of the service group can add tasks. They are also able to add group specific standard tasks to the mice. But of coursethey can only add standard tasks of a particular group if all the selected mice belong to this group.

24.4.5Creating a new task bundle

Tasks bundles are a set of individual tasks which are bundled together. In such a task bundle you can define that the tasks should be carried out subsequently with a defined time struvcture. E. g. you might want to define a series of tasks in which on day 1 you perform a special treatment on day 3 in the evening you should check the mice and on day 6 you have to sacrifice the mice.
Mausoleum gives you the opportunity to define such task bundles which are created from the simple standard tasks. First you select the standard tasks you want to use in the task bundle (at least two).



Then you define the name or definition of the task bundle and for each of the individual subtasks the day offset and time preference and confirm the creation of the new task bundle by cliocking "YES" in this dialog:



If the user now adds this task bundle to a mouse using the "**Add task**"-button in the mouse inspector and specifies a date then for each element of the task bundle a task will automnatically be added. In the shown expample this would happen:

- at the specifed date the task "**Transfer**" wil be added
- 4 days after the specified date another task "**Your new standard**" will be added.

24.4.6Removing standard tasks

Only GURUS can remove the group specific standard tasks. The predefined system standard tasks cannot be removed. Removing a standard task will not remove it from the database. It merely becomes invisible to the users and cannot be selected for a task anymore.
To remove a particular standard task select it in the standard task table and click the "**Remove**"-button.

24.4.7Reviving standard tasks

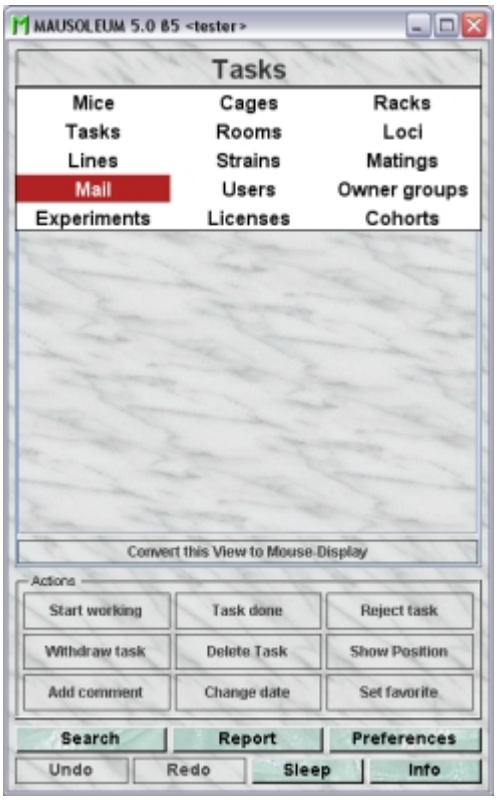
The GURU of Group can inactivated group specific standard tasks. To do so first you have to make the standard task visible in the standard task table. You can do it using the "**A**" button in the upper right corner of the table.

Then you have to select the particular standard task and click ont "**Reactivate**"-button in the lower right corner of this tab.

25 Mail

25.1 In brief

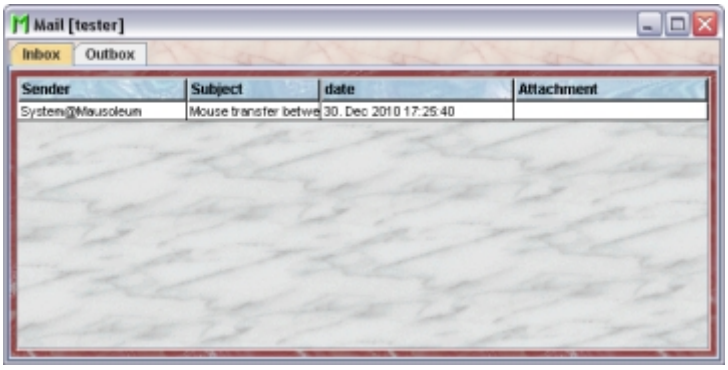
Mausoleum has a built in mail function. This Mausoluem internal mail is not connected to the regular email traffic. It is only visible if your are logged in to a Mausoleum Client. Using the mail function it is possible to send informations to members of your or other groups defined on your Mausoleum server. You will be informed if there is new incoming mail in the object selection field of the inspector.



The mail function cand be used to transfer the information of mice together with the necessary loci, lines and strains to other groups.

25.2 The mail window

By clicking "**Mail**" in the object selection field of the Inspector you will get a window with the tables for your incoming and outgoing Mausoleum mails.

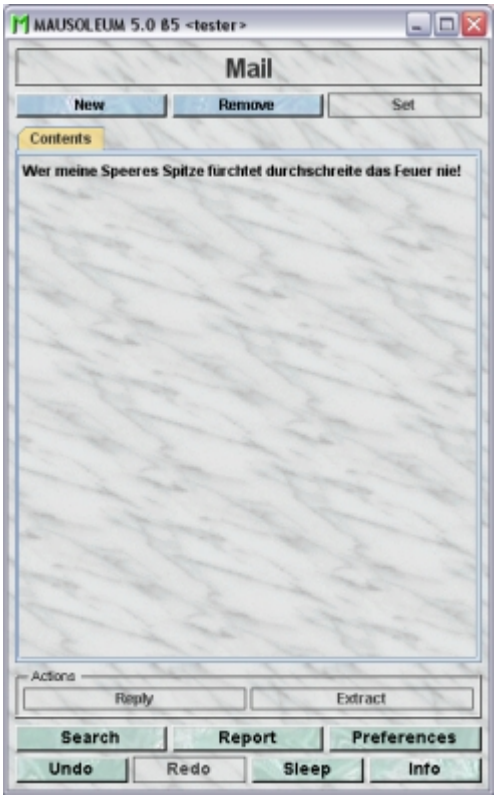


In this winodw you see two tabs containing mail tables. One for the incoming and one for the outgoing Mausoleum mails. Using the command "**Arrange columns**" from the context menu (right mouse click in the table) you can specify which attributes of the mails should be shown in this table. These attributes are available for the mail tables:

Column header	Description	Sortable	Filterable	Colorable
Attachment	The Attachment	X		
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
ID	The technical ID	X		
Recipient	The recipient	X	X	
Sender	The Sender	X	X	
Subject	The subject	X	X	
date	The date	X		
end	The end date of the object	X		
start	The start date of the object	X		

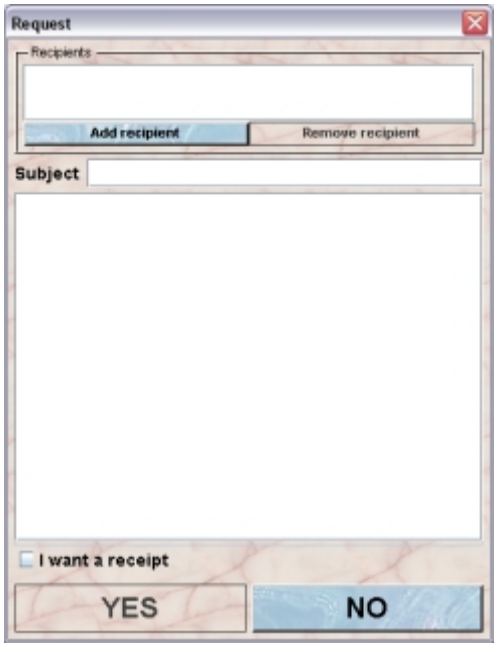
25.3 The Mail inspector

The mail inspector is active as soon as a mail table becomes the active table. It will adopt to the attributes of the selected mail and lets the user see the contents of the mail. The mail inspector has only one tab in which the contents of the mail is shown:

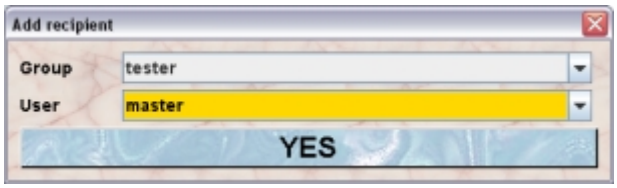


25.4 Sending a mail

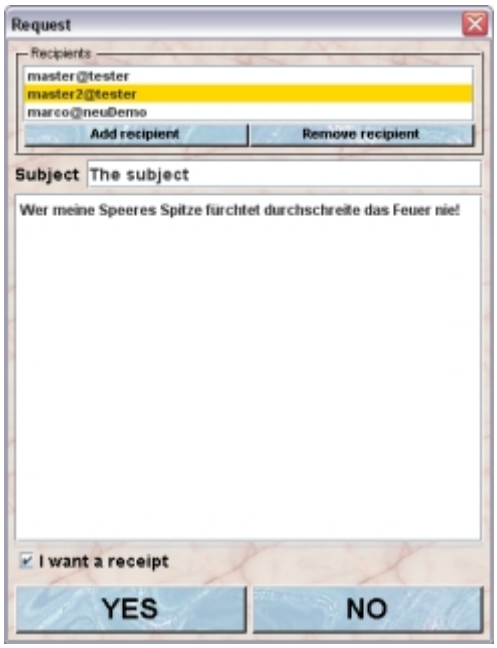
To send a mail you first select "**Mail**" in the object selection field in the inspector and then click the "**New**"-button in the mail inspector. A dialig appears in which you enter all teh data of your mail.



You can enter one or more recipients by clicking the "**Add recipient**"-button below the recipients field. If you do so a new dialog is sdisplayed in wihich you can select the recipient's group and the recipient.



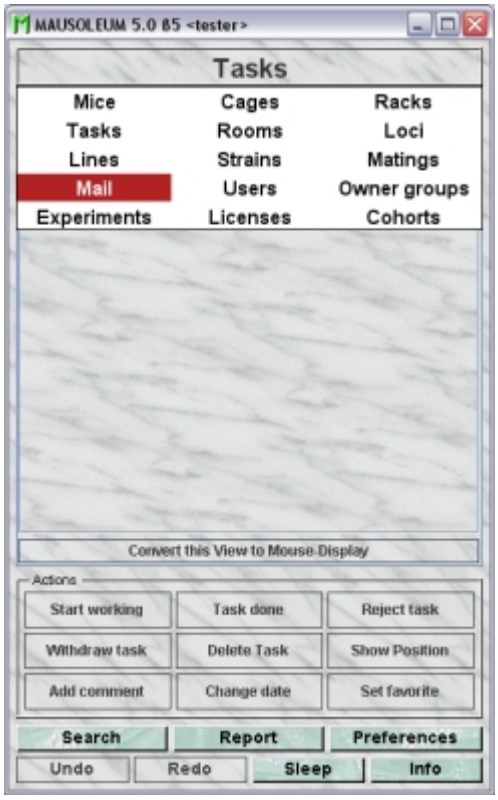
Clicking the "**YES**"-button brings you back to the mail dioalog where you enter subject and body of your mail.



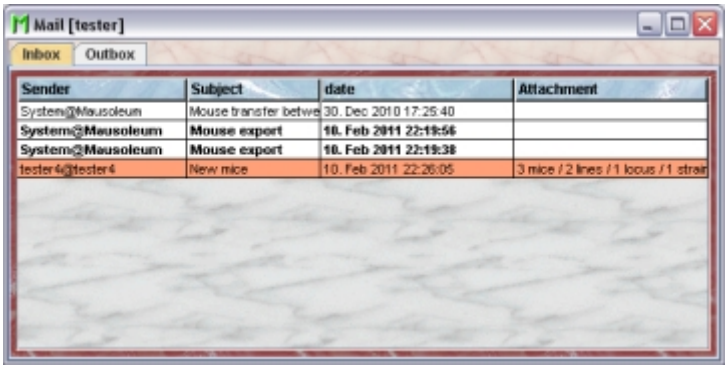
If you want to get notified when the recipient read your mail you select the checkbox "**I want a receipt**" below the text area. After clicking the "**YES**"-button the mail will be sent to the recipients.

25.5 Extracting mice from a Mausoleum mail

If someone from another group in your institute sent the data for mice using the Mausoleum mail function you will notified - as always - that a new mail arrived by highlighting "**Mail**" in the object selection field in the inspector:

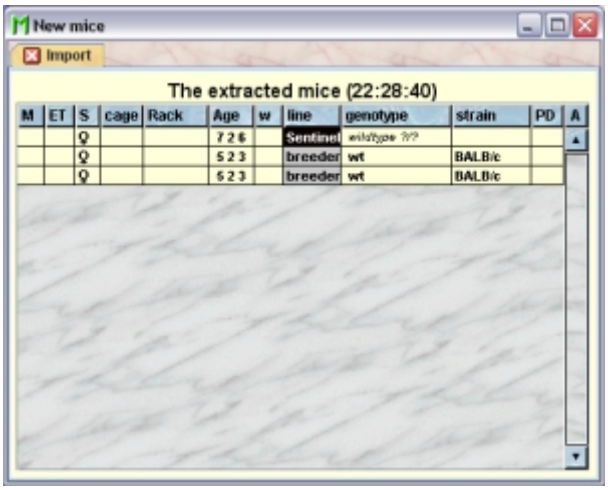


If you then select the "Inbox" tab in the mail window you see the new mail. And you can detect that this mail has an attachment in our example containg data for 3 mice, 1 locus, 2 lines and 1 strain:

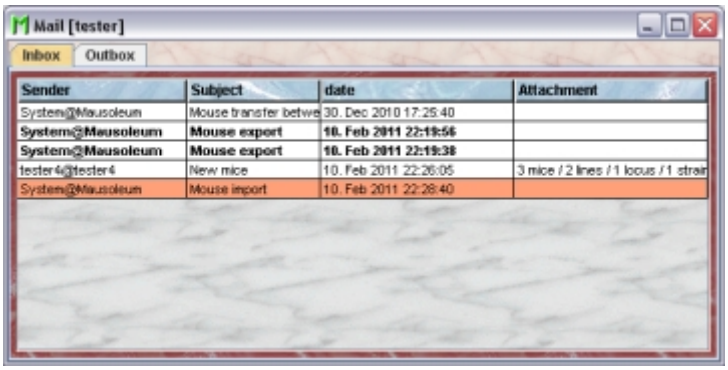


To extract these data you select this email and click on the "**Extract**"-button in the mail inspector.

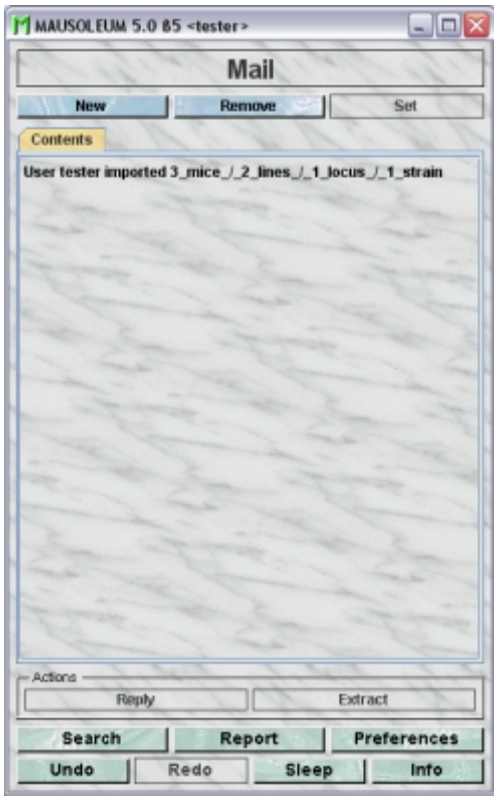
After the extraction a window is shown which contains a table with the extracted mice.



The GURUs of the group will get a notification email from the system:



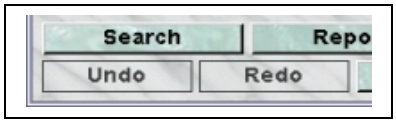
The contents of this email is the information that a specific user has imported a certain number of objects into the group's database.



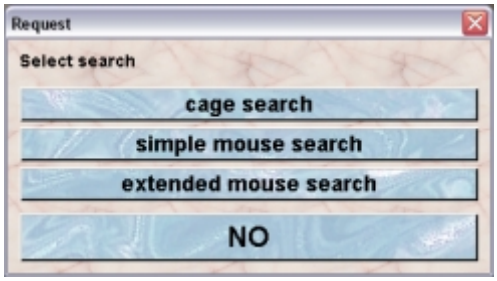
26 Search

26.1 Starting a search

You start searching by clicking the "**Search**"-button in the lower left part of the inspector.



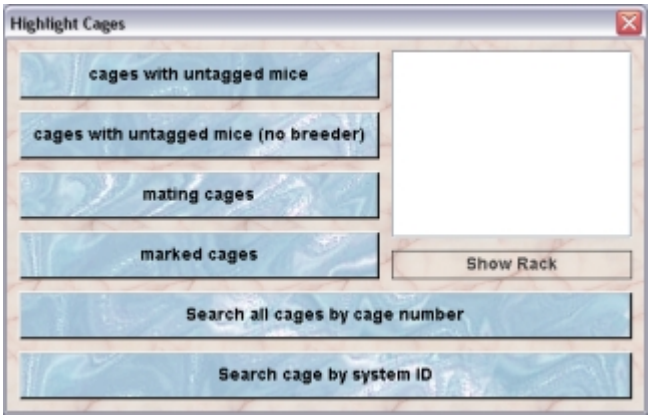
Clicking this button opens a dialog which lets you choose between the different search modes of Mausoleum. There are different search modes available in Mausoleum. You can search cages with specific attributes. You can search for mice either in a more simple way only in the set of active mice or in an elaborate way where you can specify multiple criteria and can search in the set of active as well as in the set of dead mice.



You start the respective search mode by clicking one of these buttons. You will get another dialog specific for the selected seach mode.

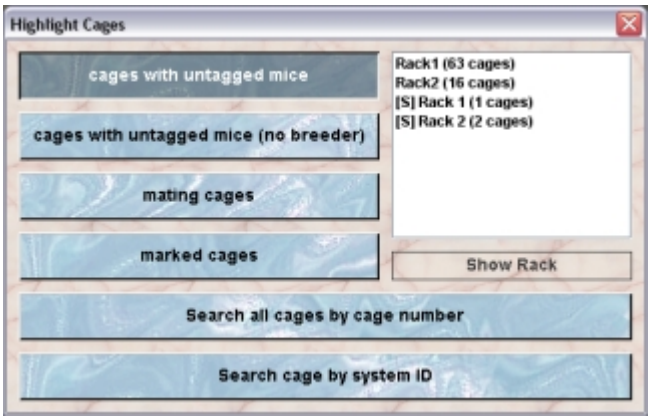
26.2 Search cages

You can search cages according to several criteria. Each of these searches is started by clicking one of the six big buttons of this dailog.

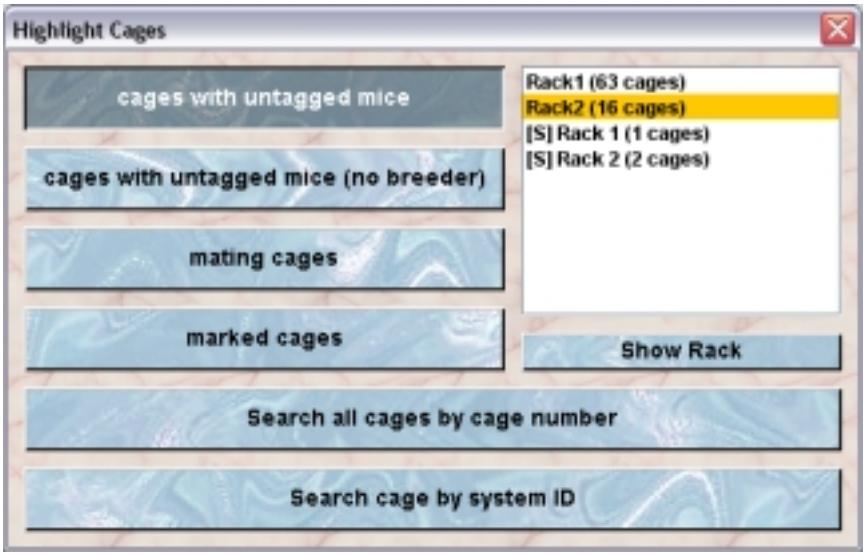


The top four buttons offer seaches which where more than on cage is expected to be found. Therefore you will get a list in the area to the right of these buttons where with the racks and the number of matchings cages is shown.
By this method you can search for:

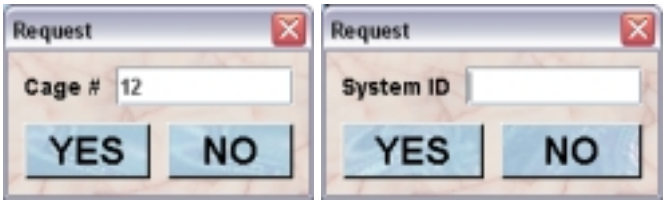
- **cages with untagged mice**: You iwll fiind all cages where there is at least one mouse without an eartag
- **cages with untagged mice (no breeder)**: Same as above but mice of the breeder line are ignored. This mode was introduce because in many labs teh breeder mice which don't belong to transgenic lines will not be tagged anyway.
- **mating cages**: Shows all mating cages. Mating cages and how they are defined can be found **here**.
- **marked cages**: Shows all cages which have a mark (standard pointer or singel letter) set as described **here**.



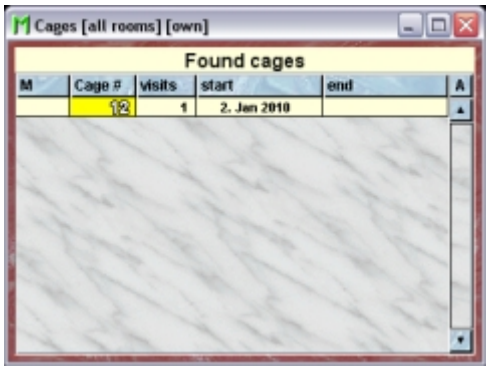
After clicking one of these buttons you will immediately see in the list to the right in which racks cages matching the criteria can be found. If you select a rack in this list you can click the buitton "**Show rack**". This will open the rack window with the selected rack and all the cages which match the criteria in this rack are selected.



The other two big buttons let you search for cages with a specific cage-number or system-ID. In both cases you will get a diaolg where you can type in the respective number:



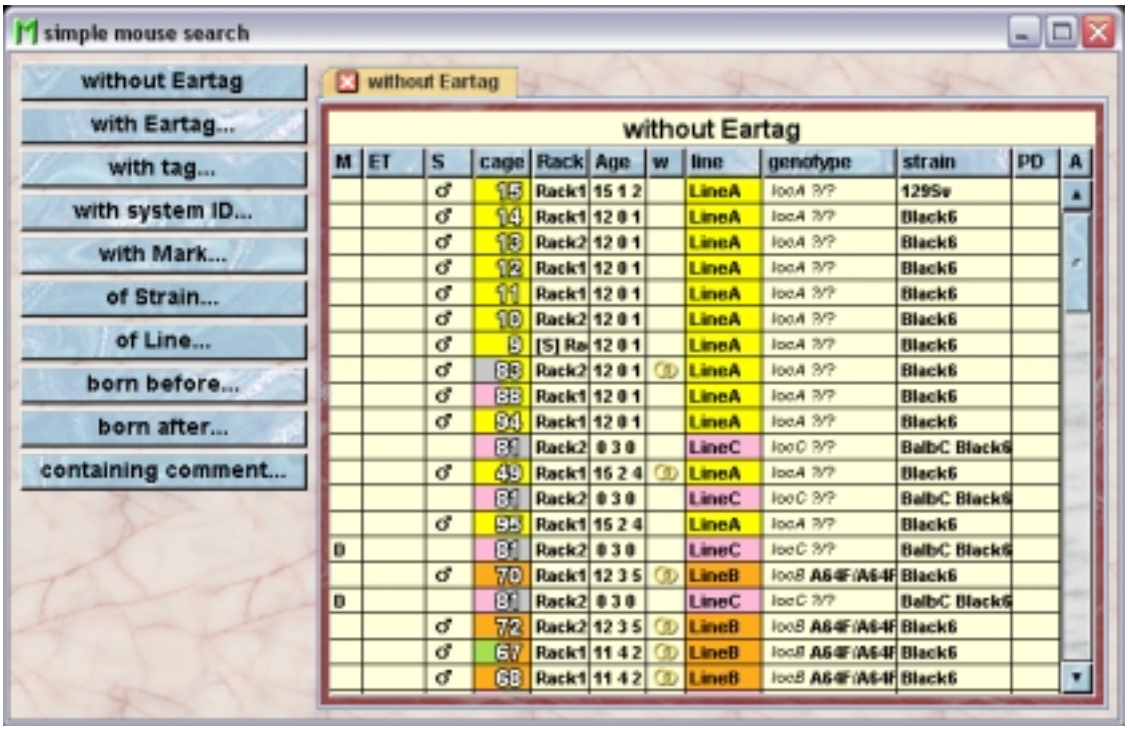
After you typed in the number and clicked on "YES" you will get a new window where the found cages (if present) are shown:



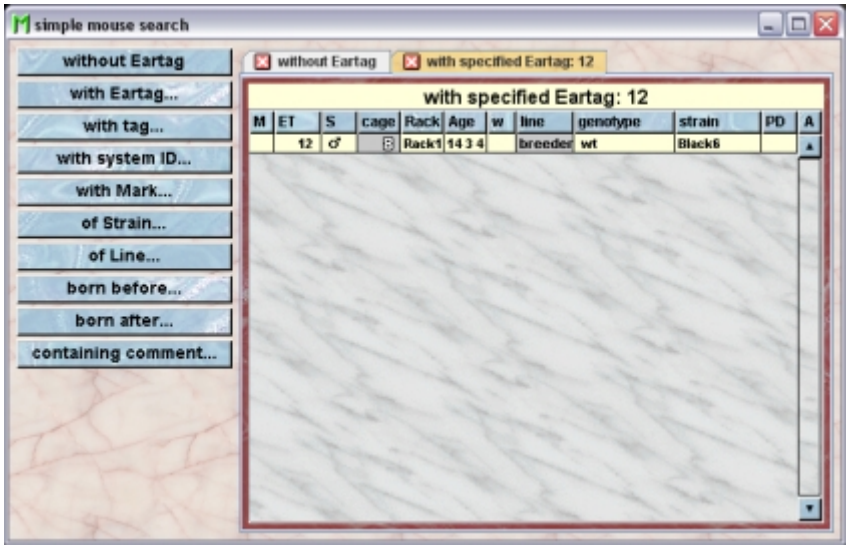
26.3 Simple mouse search

The simple mouse search offers you the possibility to find living mice within the database which match one search criteria.

You can start the search by clicking one of the blue buttons on the left hand side of the window. The result of the search will be shown in a mouse table in a new tab in this window.

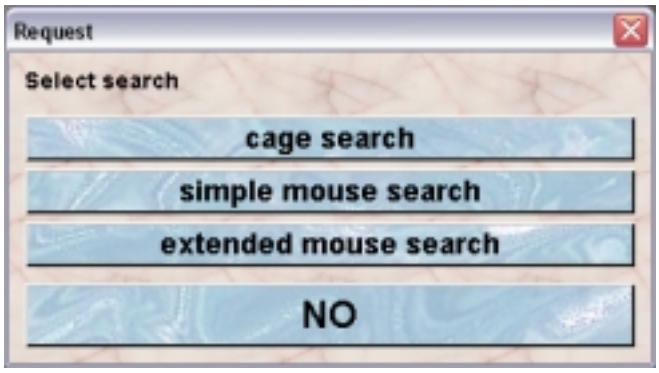


The buttons where a "..." is written (e. g. "**with Eartag...**") will open a dialog where you have to type in the specific value or select a specific object (e. g. "**of LIne...**"). Launching another search will open up a new tab in this window. You can remove or rename these tabs.

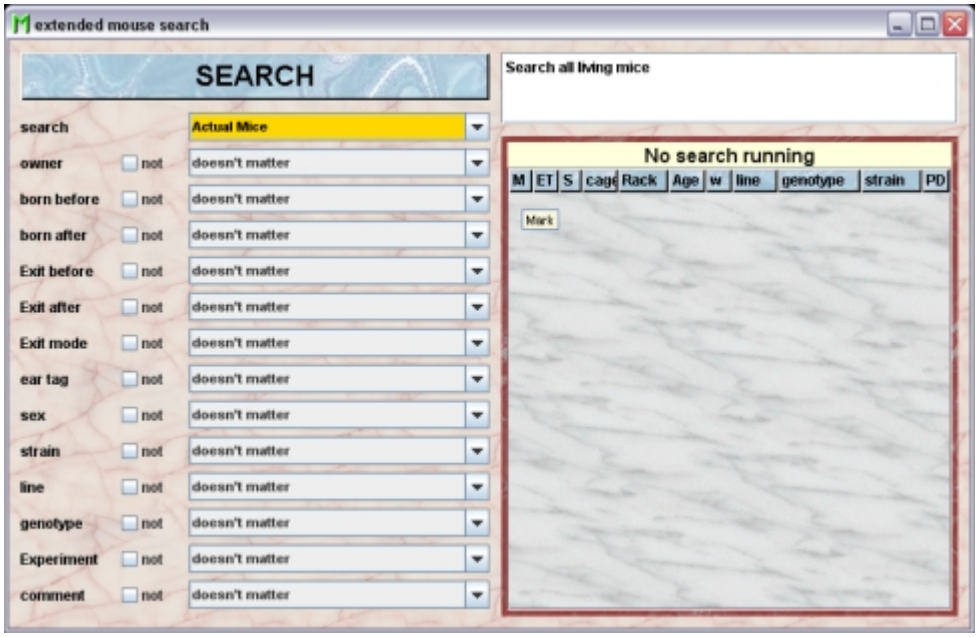


26.4 Extended mouse search

There is a second more elaborate mode of searching your mouse database. You invoke it by clicking the "**extended mouse search**"-button.



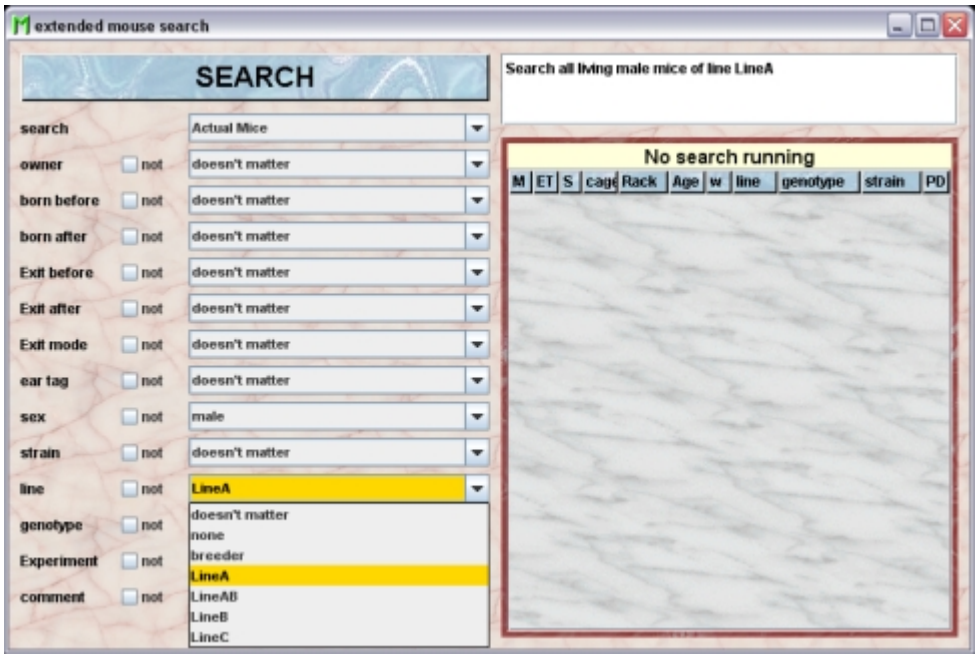
A window will open where you can specify more search criteria at a time:



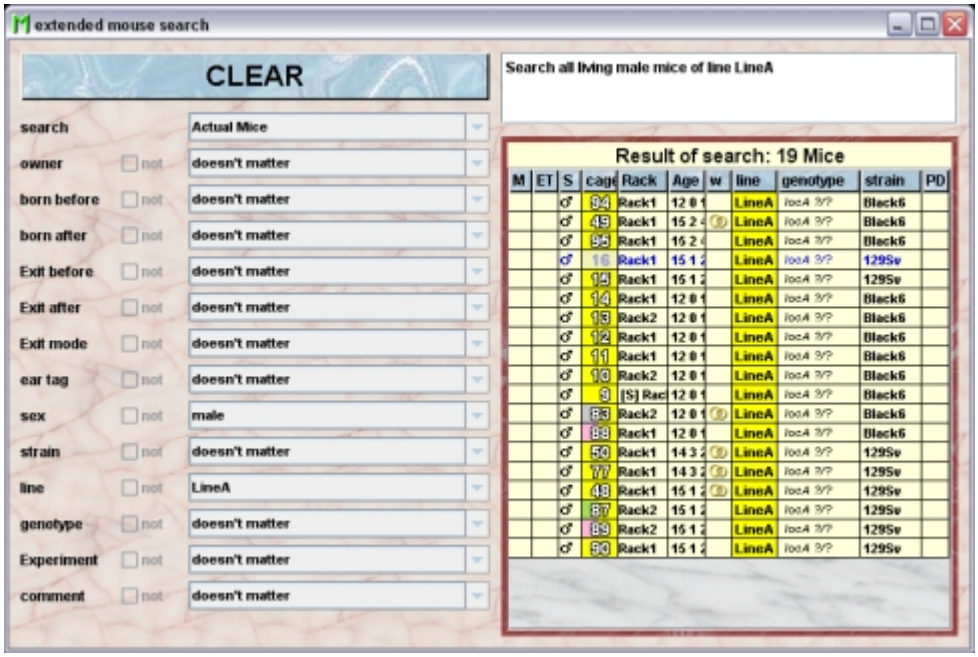
On the left side you see the selection fields where you can specify your criteria. The first line is very important. Here you specify the the bsis set of your search. You have these choices:

- **Actual mice**: Choosing this will restrict the search to the living mice of your colony. Serches for the living mice can be handled on the client machine and are therefore very fast.
- **All mice**: All mice you ever entered into the database will be checked for the specified search criteria.
- **Dead mice**: With this option you wil search only in the subset of dead mice.

Using the other selection fields you can specify the search criteria indicated by the label on the left hand side. The simplest option on top of every list in the beginning is "**doesn't matter**" which means that this criteria will be ignored. Depending on the type of criteria you will get lists where the possible options are shown (see below for "**line**") or you can invoke a dialog where you can type in a specific value (e. g. for "**born before**"). The little checkbox "**not**" will invert the serach for this criteria. All selected criteria are checked (technically speaking) in an **AND** mode which means that a mouse has to satisfy all the criteria to be shown in the result table.



If you are done with the attributes you want to search for click on the big button "**SEARCH**". The search will start and while it is running you will see the found mice populating the mouse table to the right. While the search is running you can interrupt by clicking the big button now labeled "**STOP**". Finally your search is done and you see that the header in the mouse table now says "**Result of search**".



Only one search per client is permitted at a time. Therefore you have to clear the result table before you start another one using the big button now labeled "**CLEAR**".

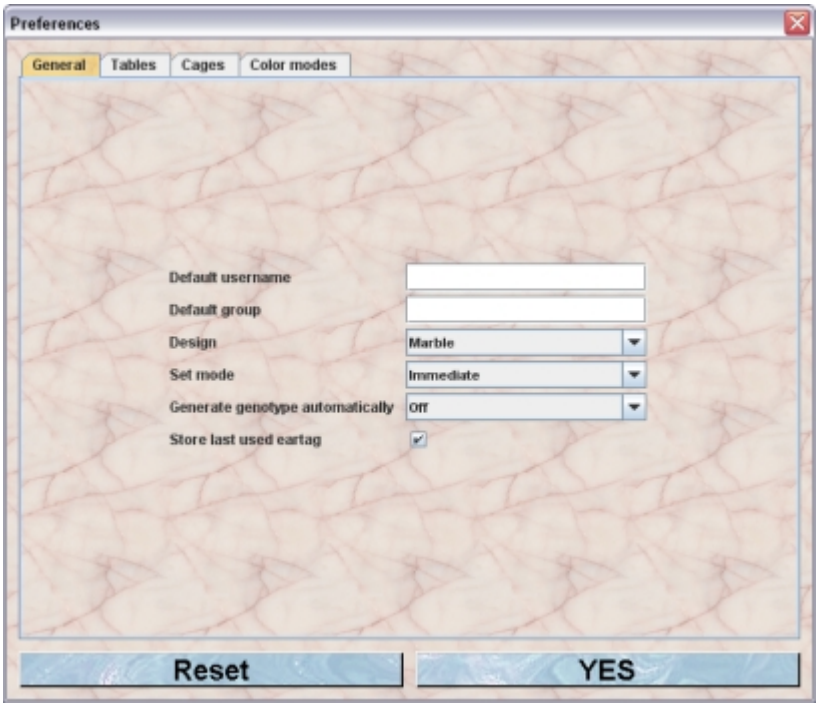
27 Preferences

You invoke the preferences dialog by clicking the "**Preferences**" button in the lower right area of the **Mausoleum inspector**:

After clicking this button the preferences dialog shows up. This dialog has several tabs which let you specify the different parameters for Mausoleum usage.

27.1 General

In this tab general parameters of the Mausoleum user interface are determined

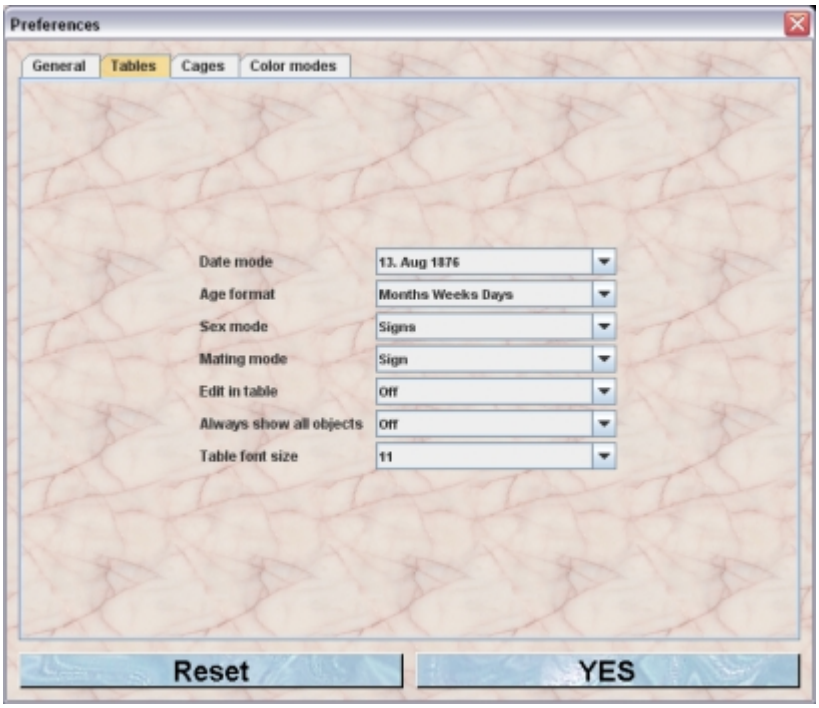


- **Default user name** sets the User upon log in from the particular PC.
- **Default group** set group upon log in from the particular PC.
- **Design** is the background decoration for Mausoleum.
- **Set mode** is the mode of action when you change an attribute of an object. If set to "immediate" the change is (for most of the attributes) immediately written to the database. In the other case the changes are collected and only transmitted to the databse, when the "Set"-button is pressed. Exceptions from this rule are the comment-fields. Here you change the text. Because there is no clear "End of action sign" as for other fields you have to tell Mausoleum when you are done with editing. Therefore the field turns red upon changing and the text is set, when you click the "Set"-button.
- **Generate genotype automatically** can be set to on or off and in the on position Mausoleum will deem offspring to homozygous parents as homozygous. In the off position the user has to confirm genotype.

- **Store last used eartag**: If set the last eartag which was set by the user will be stored on the server and in the nect session of this user the next number will be used as a default if the user sets an eartag.

27.2 Tables

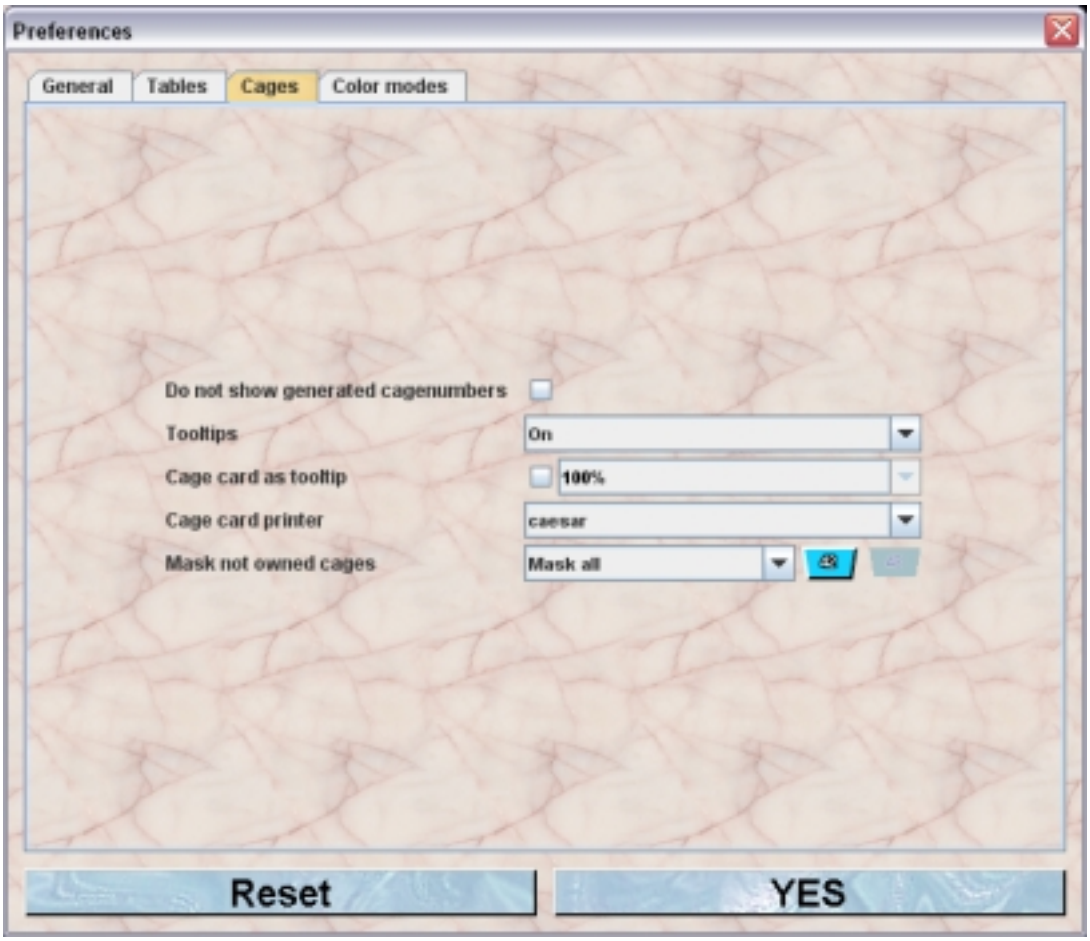
Here you specify how data in the **tables** of Mausoleum are displayed



- **Date mode** gives you the choice between different modes (european and american) how Dates will be presented in Mausoleum tables
- **Age format** comes in three flavours: Weeks, Months/weeks/days or Weeks/days. When copying tables containing the two latter modes Excel tends to misinterpret the data after pasting into a worksheet.
- **Sex mode** is either signs or letters in the tables.
- **Mating mode** is either signs or letters in the tables.
- **Edit in table** can be set on or off which may restrict editing to the inspector and drag and drop procedures.
- **Always show all objects** determines whether you will see other's objects (mice or cages) in all tables.
- **Table font size** Her you specify the font size which should be used in all the tables

27.3 Cages

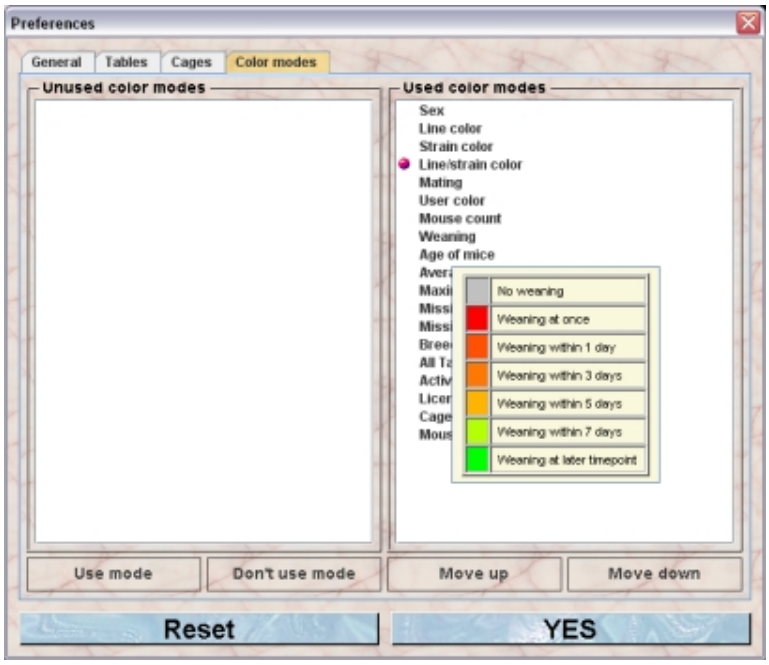
Here you specify how cages are shown and handled in Mausoleum



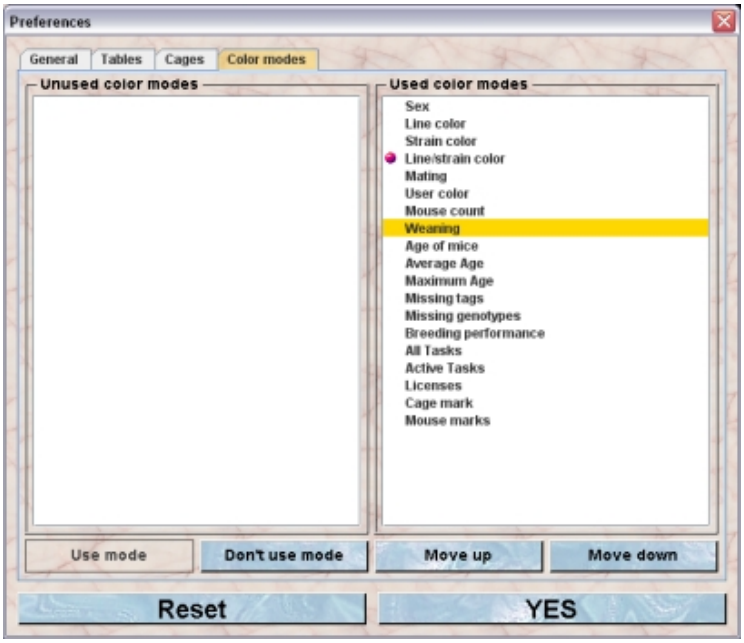
- **Do not show generated cagenumbers** Mausoleum will generate cage numbers automatically. The main reason for this is that most users prefer to have small cage numbers instead of numbers which will grow as long as you use the Mausoleum. But if you like to use the system-ID of the cage instead you have to check this box.
- **Tool tips** determines whether or not tooltip/mouse over windows appear when you move the mouse over a cage in the rack window or any cage table.
- **Cage card as tooltip** will show the cage contents formatted as the selected cage card printer above when checked. If the checkbox is selected you can specify in addition the zoom factor by which the cage card is enlarged or shrinked.
- **Cage card printer** is the default cage card design suggested when printing cage cards.
- **Mask not owned cages** will hide or characterize cages belonging to other users visually depending on which mode is active.The options are Mask nothing, Mask Border, Mask Border and number or Mask all.

27.4 Color modes

Mausoleum comes with a lot of different **color modes** for indicating certain aspects of the content of cages. Usually you won't use all of them. In this tab you can specify which color modes will be used and which one is the active color mode.



You see two lists in which the color modes are displayed. The left one comntains the color modes which aren't used at the moment. Thes modes will not be selectable in the selection box of the rack window or the rack overview. The right list contains the color modes which you want to use. By moving the cursor over the list items you get a tooltip (here shown for color mode "Weaning") showing you information about the color scheme used in the particular color mode. You also see the little red spot indicating the active color mode. You can define a different active color mode by simply clicking in the area in front of the name of the desired color mode.



After selecting a color mode you can disable or enable it using the buttons "**Use mode**" or "**Don't use mode**" respectively. The buttons "**Move up**" and "**Move down**" let you determine the order in which the color modes are displayed in the selection boxes in the rack window or the rack overview.

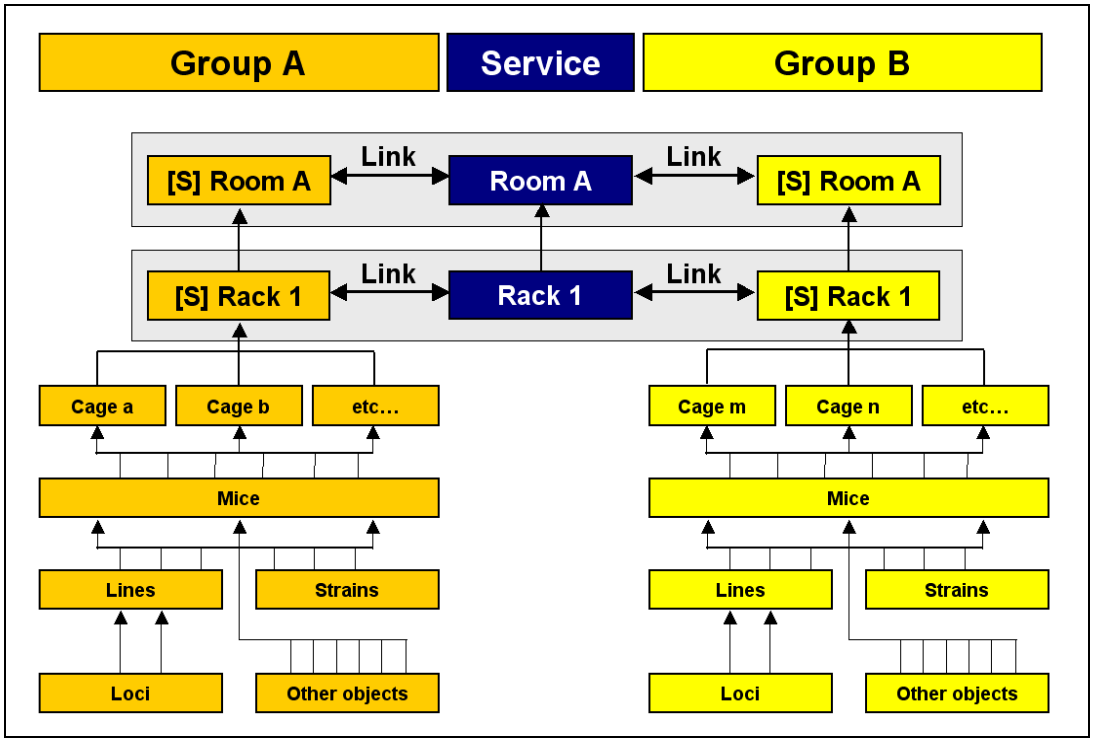
28 Service group

Depending on the institute where you are using the Mausoleum, mouse work can be organized in different ways. In one institute the individual groups are doing all the necessary work by themselves whereas in other institutes the mouse work is performed by a specialized service unit. In the first mode every group has its own data and no member from another group can see or manipulate them. But if you are using shared resources as in the second mode the individual groups have to share to some extent informations about rooms, racks, cages and mice.

To meet these requirements there is a special group in Mausoleum called "service". This group will be automatically created. The service group contains the information of shared resources. These resources are rooms and racks which are shared between individual groups.

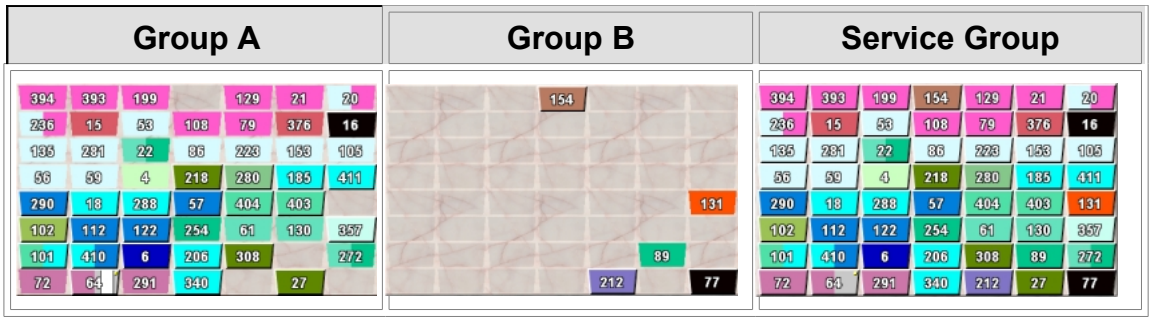
If two groups share a rack it is necessary for them to know which spots are occupied from the other group. They do not need to know what is in the cages but they must not put their cage at a spot where already a cage from the group sits. To achieve this, the shared rack has to be under the control of the service unit.

The next figure tries to illustrate the way how this is organized in Mausoleum. We have our two groups called "**Group A**" and "**Group B**". They share a Rack called "**Rack 1**" which sits in a room called "**Room A**".

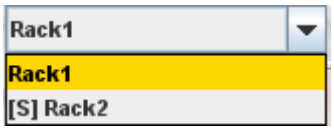


You see that that both groups have an object for the rack and the room. Because they want to share this rack, it is also defined in the service group. In addition there is a link established between the racks what makes it possible to bring together the necessary data. What is in these racks is not contained in the service group. All the cages, mice, lines, strains etc. is private property of the groups. For the service group the only important thing is that it can correlate the information contained in the group's data with its rack and room objects. After a rack is under control of the service group its attributes (like name or the room where it is located) cannot be altered. It also cannot be deleted from the group's guru. All that is possible only for a user with the role **HEAD OF SERVICE** in the service group.

Another point here is that caretakers of the service group must handle all cages within a room regardless of the group to which they belong. For them all cages and mice within this room are visible. The next table shows what the rack display looks like in a rack which is shared between Group A and Group B in the different groups.



Logged in as a user of either Group A or Group B you can see only the cages from your group. But via the link mentioned above Mausoleum knows that other groups are also using this rack and can determine where cages from other groups are placed. These occupied spots in the rack are shown as dark shaded empty spots. You cannot see which cage from another group is sitting there nor do you have access to the content of these cages. On the other hand if you are logged in as a caretaker of the service group you can see all the cages within that rack and you can see all the mice and their attributes and can – within the limits of your privileges – modify them.
These features are only usable if the respective rack is maintained by the service group. If a group has additional racks which are not under the supervision of the service unit, only members of this group have access to these racks and to the data of the contained objects. Being logged in as a member of a normal group you can easily detect whether a given rack is under the supervision of the service group. These racks are shown with an "**[S]**" as prefix whereas the racks which are not included in the service unit don't show any prefix. In the situation shown here



Rack1 is a rack which only belongs to this group whereas **Rack2** is controlled by the service group and therefore is shown as "**[S] Rack2**". This nomenclature is also used for the shared rooms where the racks of the service group are located.

28.1 Users categories of the service group

In this group there only two possible kinds of users:
HEAD OF SERVICE: This user is the main user of the service unit. This user can create new racks and rooms and is responsible for the distribution of these objects to the groups. In addition this user can create reports for the groups and for the whole service unit.
SERVICE CARETAKER: This user is the one working with the mice and cages within one room. He or she can see and modify the attributes of all the mice within the room regardless of the group to which they belong.

28.2 Working as Head of Service

28.2.1 Logging in

In the Login dialog you type in the login data.

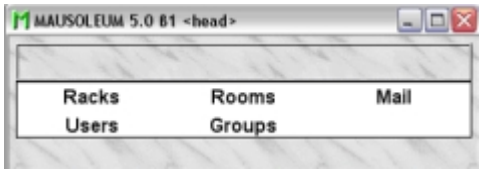
The Head of Service user has to be created by the Mausoleum Administrator. In the Administration window there is a function to define these users and their login credentials. In case you don't know the credentials you have to ask your Mausoleum administrator.

28.2.2 Visible objects

The objects which are controlled by the service group are

- Rooms
- Racks
- Users
- Mail

In addition the head of the service group also sees the groups which are defined within this Mausoleum installation. The head of service can neither create nor delete groups. This is only possible for the Mausoleum administrator.
There are no mice, cages, lines, strains etc. present in the service group. Only the rooms and racks are controlled by this group. All other objects still belong to the individual groups. Only the use of the shared racks from the service group make these objects available for the service group.
After logging in the Mausoleum inspector appears and as in the regular Mausoleum clients you select the type of object you are interested in the top element of the Inspector window:

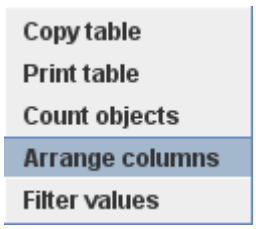


28.2.3Rooms

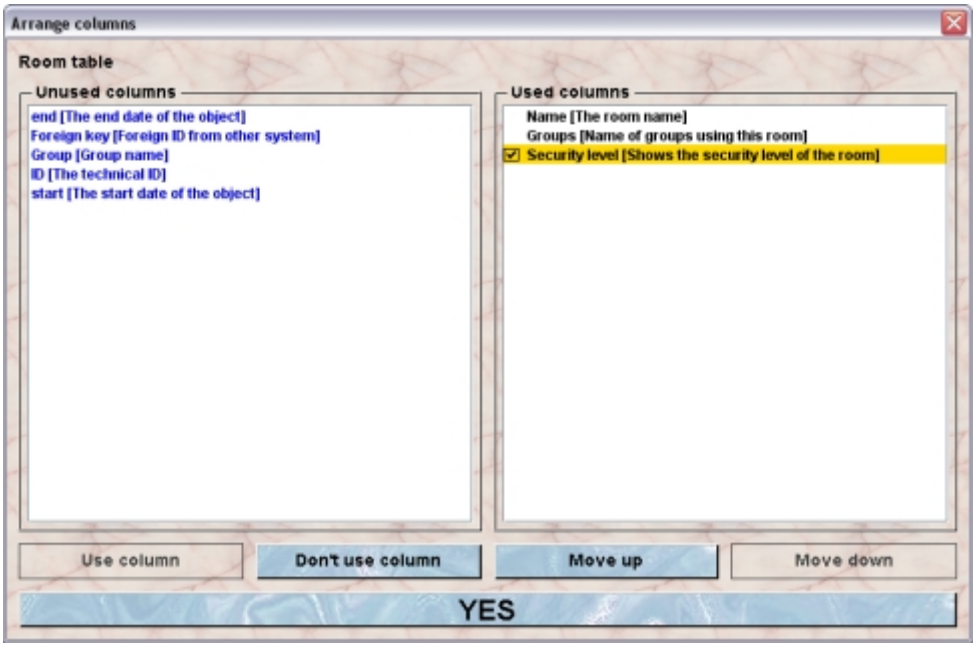
The first type of objects which have to be defined within the service unit are the rooms. You cannot define new racks without specifying in which room they are positioned. Also for the caretakers of the service group the room definitions are essential because their session are connected to one room of the service unit. That means that a service caretaker has to specify the room he or she will work.
The individual groups will gain access to a room if they have access to a rack which is located within that room. Therefore the access of groups to a given room does not need to be defined from the service group. It is automatically determined by the access to racks.

28.2.3.1The room table

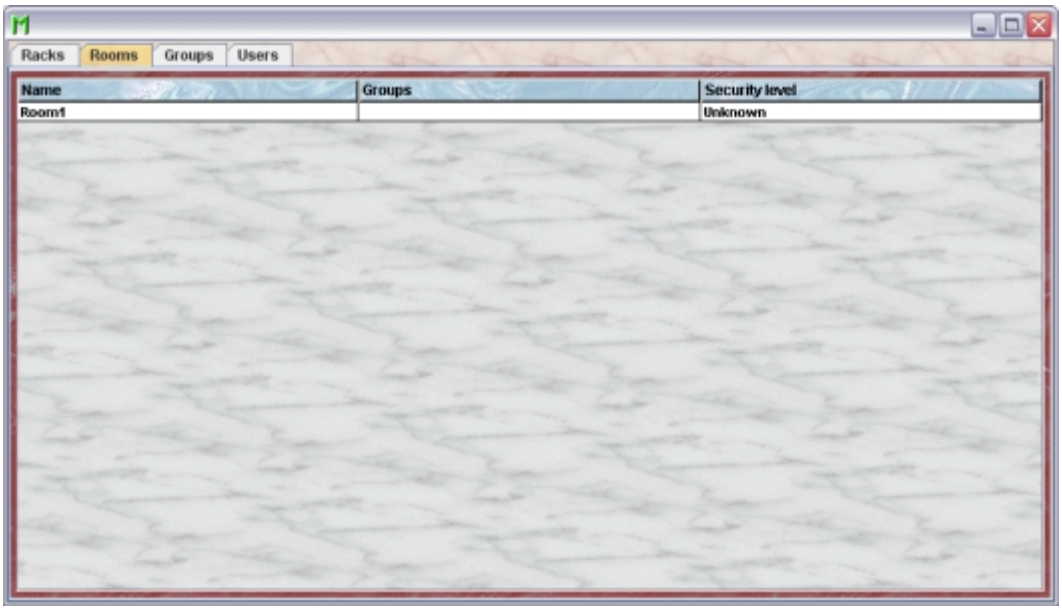
As in all other Mausoleum tables you can select the content you want to see in this table by right mouse click within the table and selecting “Arrange columns” in the context menu:



You will get the dialog for selecting the columns you want to use.



In the shown example the name of the room, the name of the groups having access to this room and the security level (with colour coding) will be shown in the room table.

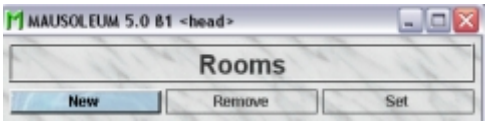


28.2.3.2The room inspector

Upon selection of a room from the list the rooms inspector will show the name the security level and a description of the room. The racks placed in the room are listed.

28.2.3.3Creating a new room

In order to create a new room you click on the "**New**"-button in the room inspector.

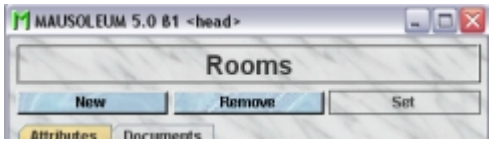


You will be asked for the name of the new room

After clicking the "**Yes**"-button the new room will be created.

28.2.3.4Removing a room

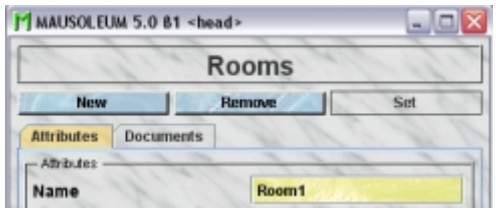
Removal of a room in the service unit is only possible if no racks are in this room and therefore no groups have access to this room. You see that the "**Remove**"-button in the Room-inspector is only enabled if you select a room in the room table which matches this condition.



If you click the "**Remove**"-button you will be asked whether you are really want to proceed. If you answer this with "**Yes**" the room will be removed from the service group.

28.2.3.5Renaming a room

If you want to change the name of a room you select the room in the room table and type in the desired name in the **Name** field in the room inspector. After hitting the `[return]` or `[enter]` key the name will be set.



You are neither allowed to set an empty name ("") nor to use a name which is already given to another room.
If "**Edit in table**" is set to "**On**" in the Preferences you can also click in the Name column of the room table and type in the new name in the dialog.

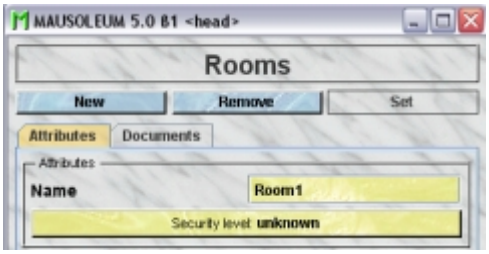
Hitting the `[return]` or `[enter]` key or preesing the "**YES**"-button sets the new name for the room. The general limitations for room also apply here.

28.2.3.6Setting the security level of a room

Rooms can have different security levels (like SPF). This is relevant if you want to control cage traffic between rooms of different security levels. There are three defined security levels for rooms:

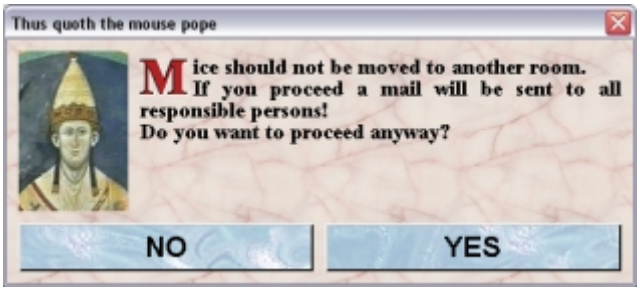
- Low
- Medium
- High

The security level is shown in the “Security level”-button in the room inspector:

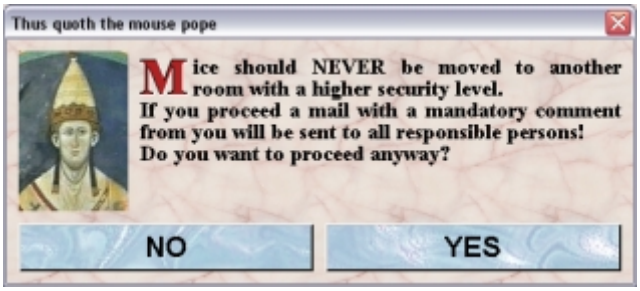


To change it you click on this button and will get this dialog:

Clicking on of the top four buttons sets the value for the security level. Clicking the “**NO**”-button leaves the security level unchanged.
The security level of a room has consequences for mouse handling. The following lines are not applicable for the head of the service group because this user cannot transfer mice. They are relevant for regular users or for caretakers of the service group.
Mouse transfers between rooms with a defined security level are not recommended. If you want to transfer mice from one room with a defined security level to another room which also has a defined security level you will get informed by the mouse pope that you shouldn’t do that. If the security level of the target room is lower or equal to the security level of the source room you will get this alert



If you proceed by clicking “**YES**” a mausoleum mail with the details of this transfer will be sent to the gurus of the group and – if the service group is involved – to the head of the service group.
If the security level of the target room is higher than the security level of the target room you will a get an even harsher mouse pope alert:



If you proceed by clicking "**YES**" you have to give an explanation for this transfer which is then added to the mail which also will be sent to all responsible persons.

28.2.3.7Changing the room description

You can give a description for the rooms. In order to edit this description you type in the description in the Description-field. Upon change this field will turn red.

Because there is no clear end-signal (descriptions might contain paragraphs an evene empty lines) you have to press the blue "**Set**"-button to enter your description into the database.

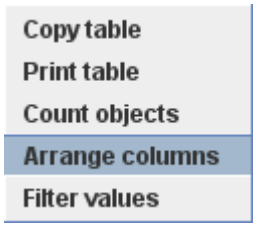
28.2.4Racks

If you have defined rooms within the service unit you can start defining the racks which are located in these rooms. Racks in Mausoleum are assumed to have a regular grid with spots each of them capable of containing exactly one cage (or double cage). Racks can be either single- or double sided.
The access of the groups to the service unit is (with one exception see below) controlled by the racks to which the groups have access to.

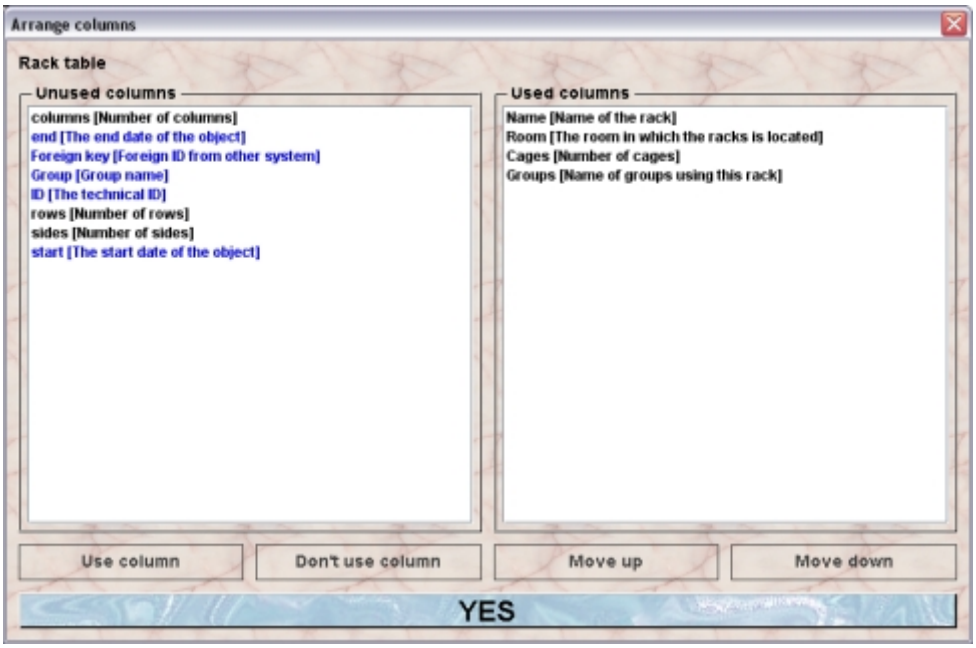
28.2.4.1The rack table

Column header	Description	Sortable	Filterable	Colorable
Cages	Number of cages	X		
Foreign key	Foreign ID from other system	X		
Group	Group name	X	X	
Groups	Name of groups using this rack	X		
ID	The technical ID	X		
Name	Name of the rack	X		
Room	The room in which the racks is located	X		
columns	Number of columns	X		
end	The end date of the object	X		
rows	Number of rows	X		
sides	Number of sides	X		
start	The start date of the object	X		

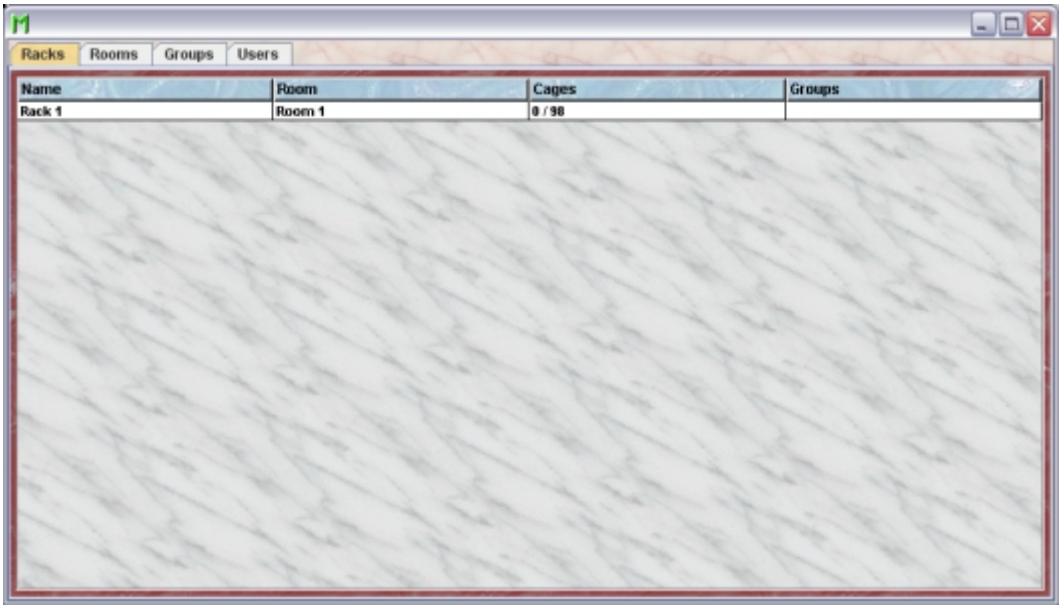
As in all other Mausoleum tables you can select the content you want to see in this table by right mouse click within the table and selecting “Arrange columns” in the context menu:



You will get the dialog for selecting the columns you want to use.

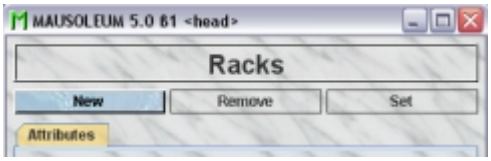


In the shown example the name of the rack, the room in which the rack is in, the number of cages in the rack and number of spots in the rack and the name of the groups having access to this rack will be shown in the rack table.



28.2.4.2Creating a new rack

In order to create a new rack you select "**Racks**" in the top element of the Inspector window and press the blue "**New**"-button in the rack inspector. Please remember that rack creation is only possible if at least one room is already defined in the service group. Because in this group all the racks have to have a defined location.



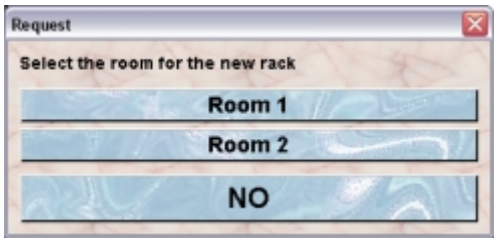
In the following dialog you will be asked for the name and the dimensions of the rack:

You are neither allowed to set an empty name (“”) nor to use a name which is already given to another rack. For the dimensions of the rack you have here the following options

- **sides**: 1 for single- or 2 for double-sided racks
- **rows**: 4 to 15
- **columns**: 4 to 15

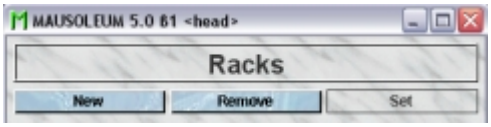
Clicking “**YES**” brings up the dialog which lets you specify the date when this rack was added to the service unit.

Clicking “**YES**” brings up the next dialog which asks for the room where the new rack is located. You have the choice between the defined rooms of the service unit. This choice will be presented as dropdown list or as buttons if less than 5 items are available.



28.2.4.3Removing a rack

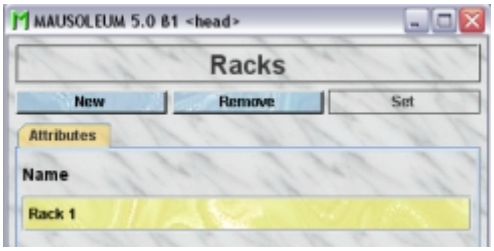
Removal of a rack in the service unit is only possible if no cages are in this. You see that the “**Remove**”-button in the rack inspector is only enabled if you select a rack in the rack table which matches this condition:



If you click the “**Remove**”-button you will be asked whether you are really want to proceed. If you answer this with “**YES**” the rack will be removed from the service group.

28.2.4.4Renaming a rack

If you want to change the name of a rack you select the room in the room table and type in the desired name in the **Name** field in the rack inspector. After hitting the `[return]` or `[enter]` key the name will be set.



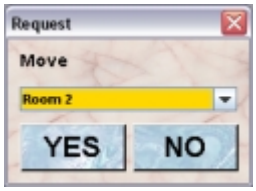
You are neither allowed to set an empty name ("") nor to use a name which is already given to another rack.
If "**Edit in table**" is set to "**On**" in the Preferences you can also click in the Name column of the rack table and type in the new name in the dialog.

Hitting the `[return]` or `[enter]` key or preesing the "**YES**"-button sets the new name for the rack. The general limitations for room also apply here.

28.2.4.5Moving a rack

Although in your daily work you won't change the location of a rack you can (e. g. if you entered a wrong room) change the room where the rack is located. In order to do so you select the rack in the rack table and presse the "**Move**"-button in the rack inspector. This button is active only if there are additional rooms present in the service group.

In the following dialog you will be asked to which room the rack should be transferred.



Clicking "**YES**" trensfers rack into the selected room in the database. All groups which have access to that rack will also gain access to the new room you selected.

28.2.4.6Givina group access top a rack

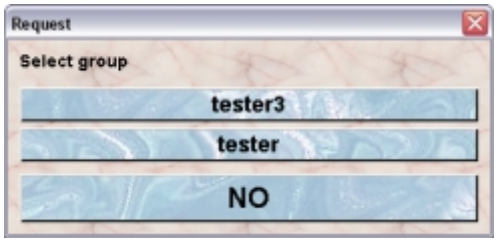
If you want to allow the access of a group to a rack of the service group you select the rack of interest in the rack tabel and click the button "**Open access for group**" in the rack inspector.

In the following dialog you have the choice between the groups which have no access to the selected rack at the moment. This choice will be presented as dropdown list or as buttons if less than 5 items are available.

28.2.4.7Removing the access to a rack

You can disbar the access of a group to a given rack whenever you need to. If you select a rack in the rack table which is accesible from at least one group you will find that the button "**Disbar access for group**" is enabled.

After clicking this button you have the choice between the groups which have access to the selected rack at the moment. This choice will be presented as dropdown list or as buttons if less than 5 items are available.



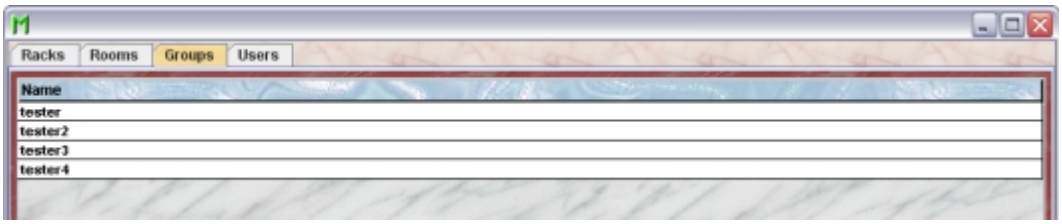
A little problem arises if you want to stop the access for a group which still has at least one cage in the selected rack. If this happens you will get a dialog in which you are informed about this fact and you are asked if you agree that those cages will be removed from the rack in the selected group.

28.2.5Groups

The groups shown in the groups table of the service group client are all regular groups which are defined in the Mausoleum installation. Groups can be created or removed by the Mausoleum Administrator only. So even as Head of the service group you cannot create new groups or remove existing ones.

28.2.5.1The group table

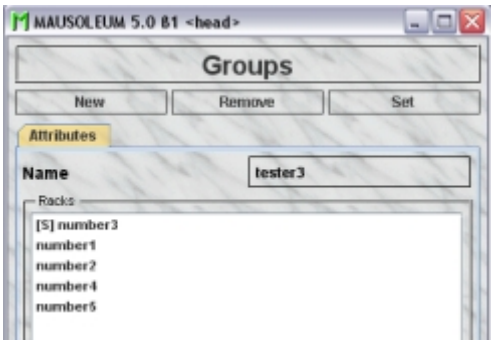
After selecting "**Groups**" in in the top element of the Inspector window the group table appears showing the names of the defined groups in this Mausoleum installation.



28.2.5.2The group inspector

Upon selection of a group from the list the group inspector will show the name of the group which cannot be edited. The racks of that group are listed.

In this example you see that this group has no rack in the service unit because no Rack shows the "**[S]**" as prefix. If one rack (e. g. rack "**number3**") would be part of the service unit this list would like this:

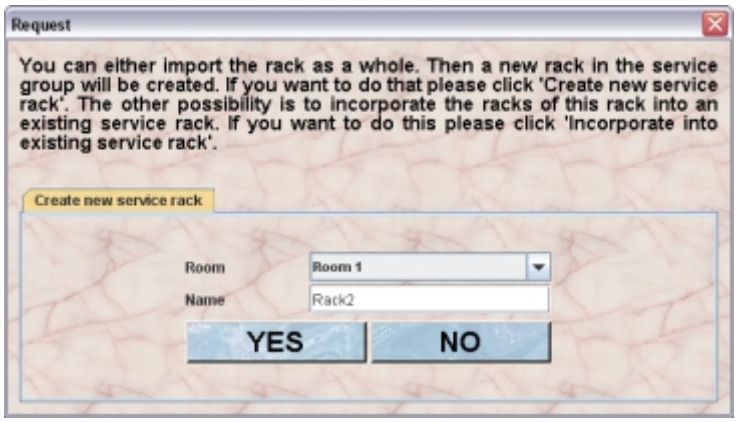


Now you can see that only the rack "**number3**" shows the "**[S]**" as prefix indicating that this that rack is now under the control of the service group and accessible for caretakers of the service group.

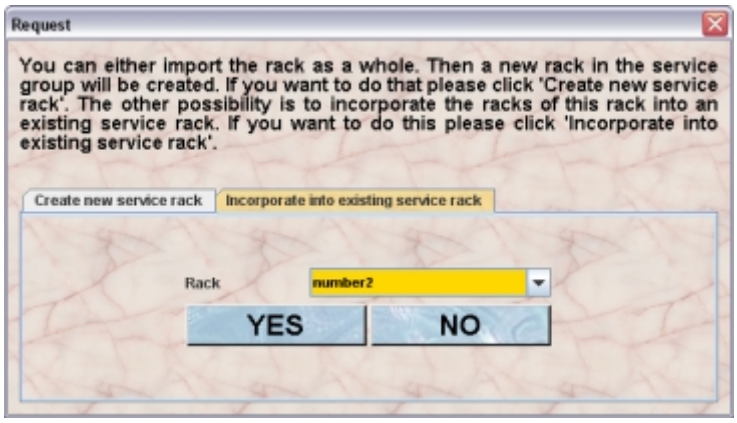
28.2.5.3Importing a rack to the service group

Above the usual way was shown how racks were defined in the service group and groups gained access to this rack. But if the groups have already defined and worked with racks which now should be imported to the service group another procedure can be used.
You first select the group in the group table. Then the racks of this group are listed in the group inspector. After selecting a rack which is not yet part of the service group (indicated by the missing "**[S]**" prefix) in the "Racks" field of the group inspector you will notice that the button "**Import rack in Service Group**" becomes active.

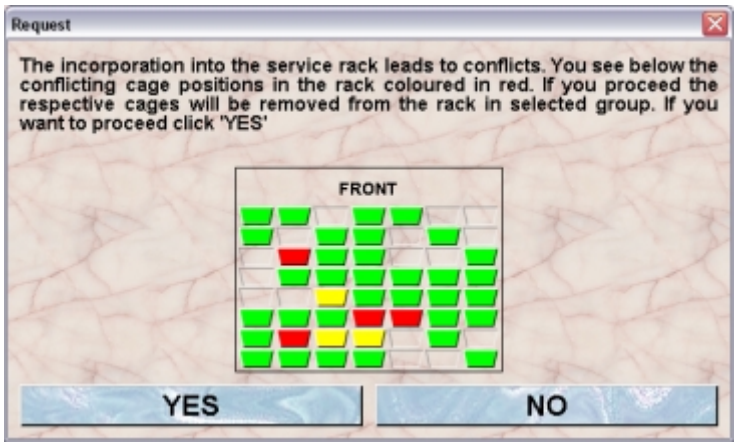
Clicking this button brings up a dialog which lets you choose the details of this import. There are two main options. The easy option is to import the rack as it is and put it into a room of the service unit. This option is always available in the tab "**Create new service rack**" in the dialog. Here you specify the room where the rack is located and you can also change the name of the rack and thereby apply the nomenclature guidelines of the service group.



But if two groups already used the same rack without the service group and they somehow agreed not to use the same spots for their cages and they do not want to loose the information where the cages sit you want to use a different strategy. In this case you prefer to mix the information from two or more groups. In the first step you will import the respective rack from the first group as it is like mentioned above. Then you select the corresponding rack from the second group and incorporate this rack into the one already present in the service group. To do so you select the tab "**Incorporate into existing service rack**" of the dialog. This option is available and therefore the tab only present if at least one rack with the same dimensions (sides, row and columns) as the selected rack is defined in the service group which is not already shared with the select group.



You find a selection box where the possible racks of the service group are shown. After selection of the appropriate rack of the service group you click "**YES**" in this tab. Now a problem can arise. It is possible that some spots which are used in the group rack are already occupied in the rack of the service rack. If this happens a dialog shows these conflicts. You see a graphical representation of the rack where the spots occupied in the service group only are shown in green, those occupied in the selected group only in yellow and the conflicting spots which are occupied in both groups are shown in red.



If you proceed by clicking "**YES**" the cages of the rack in the selected group which are at spots already occupied in the rack of the service group will be removed from the rack and you will find them afterwards in the transfer area.

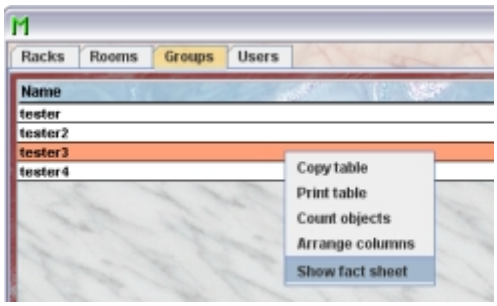
28.2.5.4Removing a rack from the service group

You can also remove a rack of the selected group from the service group. If you do this the rack is still present in both the service group and the selected group. But it is no shared anymore. Therefore the respective rack in the service group will no longer contain the cages of the selected group and in the selected group you cannot see the occupied spots from other groups. In addition the cages of the selected group which are in this rack will not be accessible for the caretakers of the service group.
You first select the group in the group table. Then the racks of this group are listed in the group inspector. After selecting a rack which is already part of the service group (indicated by the "**[S]**" prefix) in the "Racks" field of the group inspector you will notice that the button "**Remove rack from Service Group**" becomes active.

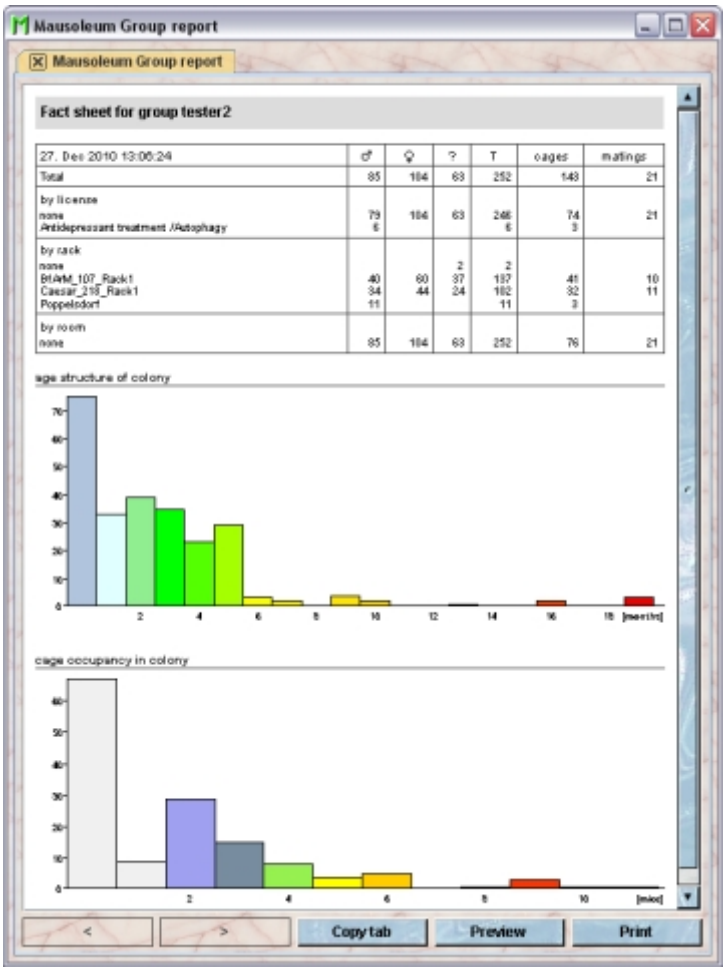
After clicking this button the rack is removed from the service group and in all groups which share this rack the information about occupied spots etc. is updated.

28.2.5.5Getting reports for the groups

As head of the servcie group you can produce detailed reports for all the groups. These reports show the number of mice, cages and matings listed by rack, by room and by license. To get these reports you select in the group table the groups you are interested in and press the right mouse button. In the context menu you select the item "**Show fact sheet**"



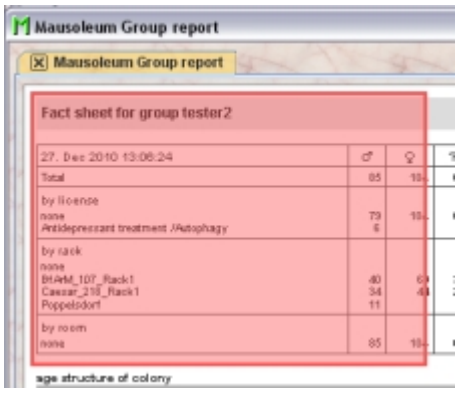
The window with the fact sheets will appear and you receive the group report for the selected groups.



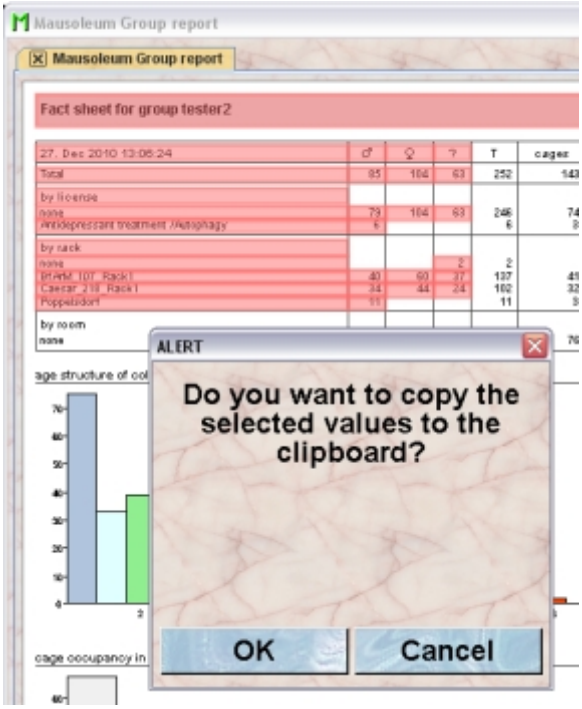
You see below the table with the statistical information diagrams which show

- age structure of colony: The height of the columns represent the number of mice in that colony having the same age in months.
- cage occupancy in colony: This diagram tells you how many cages are present in the colony with a given number of mice within.

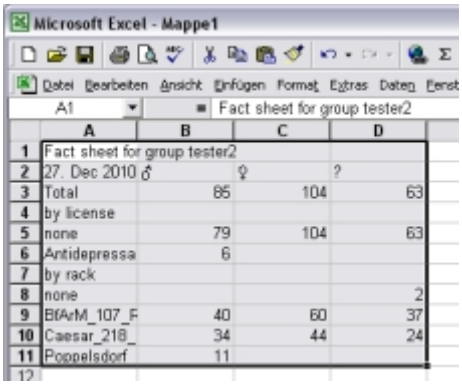
The reports can be printed and the numbers can be transferred to other programs (e. g. Excel) for further analysis. To select data from fact sheets to the system clipboard you just drag the mouse with pressed left mouse button over the data you want to copy.



After releasing the left mouse button the data which can be transferred to the system clipboard is shown with individual frames aorund every detected data element.



If you select "**OK**" in the dialog the data elements are transferred to the system clipboard in a way that they are available for the paste operation in other programs (e. g. Excel)



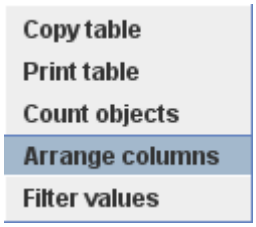
28.2.6Users

In the service group you also have defined users as in the other groups in your Mausoleum installation. But the users roles in this group are quite restricted. In this group there only two possible kinds of users:

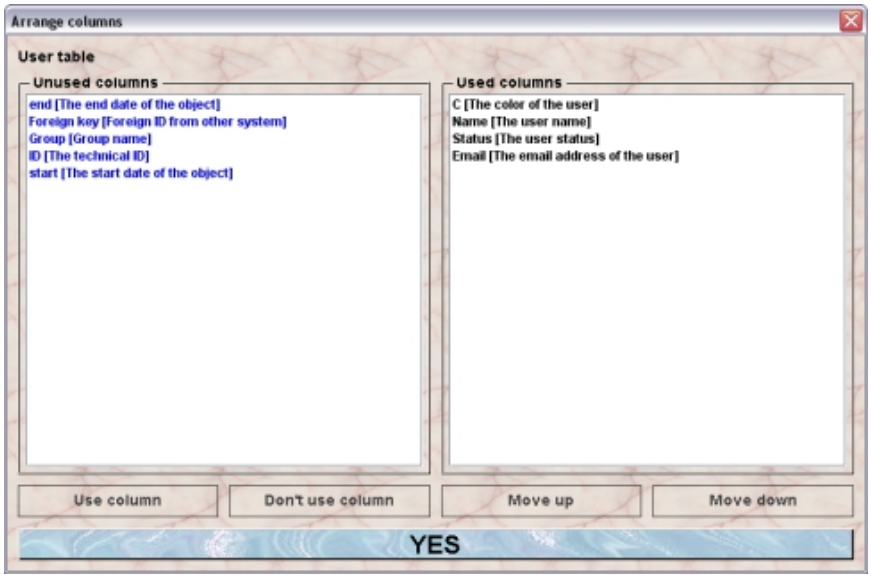
- **HEAD OF SERVICE**: This user is the main user of the service unit. This user can create new racks and rooms and is responsible for the distribution of these objects to the groups. In addition this user can create reports for the groups and for the whole service unit.
- **SERVICE CARETAKER**: This user is the one working with the mice and cages within one room. He or she can see and modify the attributes of all the mice within the room regardless of the group to which they belong.

28.2.6.1The user table

As in all other Mausoleum tables you can select the content you want to see in this table by right mouse click within the table and selecting "Arrange columns" in the context menu:



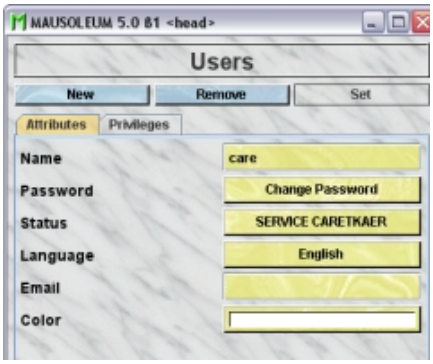
You will get the dialog for selecting the columns you want to use.



In the shown example the color, the name, the status/user role and the email of the user will be shown in the user table.

28.2.6.2The user inspector

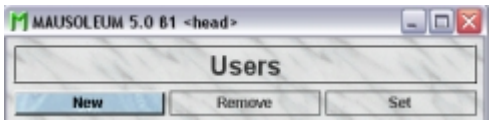
Upon selection of a user from the user table the user inspector will show the attributes of the selected user.



As usual you can edit the fields shown in yellow by clicking or editing the content.

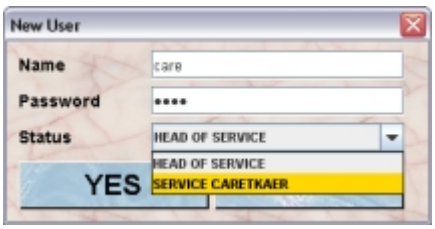
28.2.6.3Creating a new user

You creat new users by clicking the "**New**" button in the user inspector.



A dialog will appear in wgich you will specify the name, password and status/user role of the new user. As mentioned above in the service group there are only two different user roles:

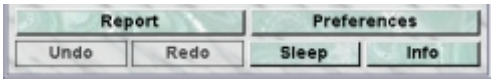
- **HEAD OF SERVICE**: This user is the main user of the service unit. This user can create new racks and rooms and is responsible for the distribution of these objects to the groups. In addition this user can create reports for the groups and for the whole service unit.
- **SERVICE CARETAKER**: This user is the one working with the mice and cages within one room. He or she can see and modify the attributes of all the mice within the room regardless of the group to which they belong.



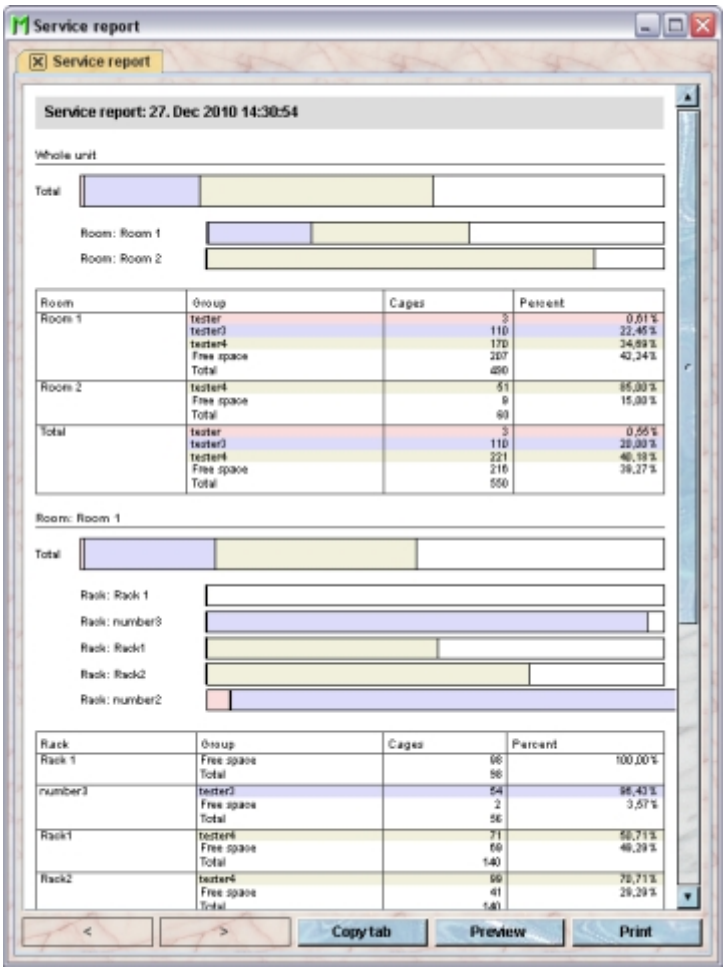
If you confirm the data using the "**YES**" button you will be asked to reenter the password thus completing the input.

28.2.7 Getting the report for the whole service unit

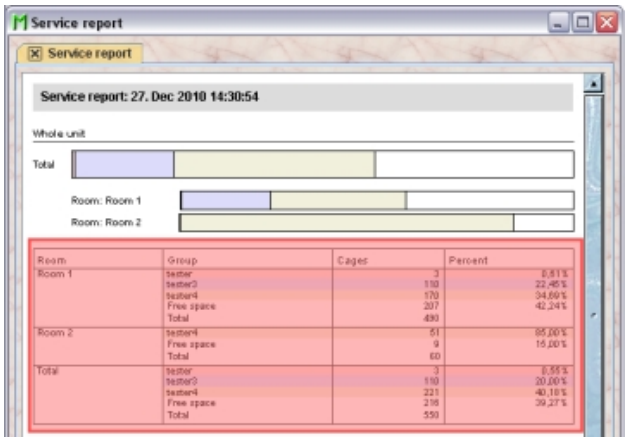
The head of the service group can also produce a report for the whole service unit. The focus of this report is a bit different compared to the reports for individual groups. In this reports the number of cages within the whole unit, each room of the service unit and the racks therein is shown for each group and in total as well as the unused space for each element. In oreder to get this report you click the "**Report**" button in the Mausoleum inspector.



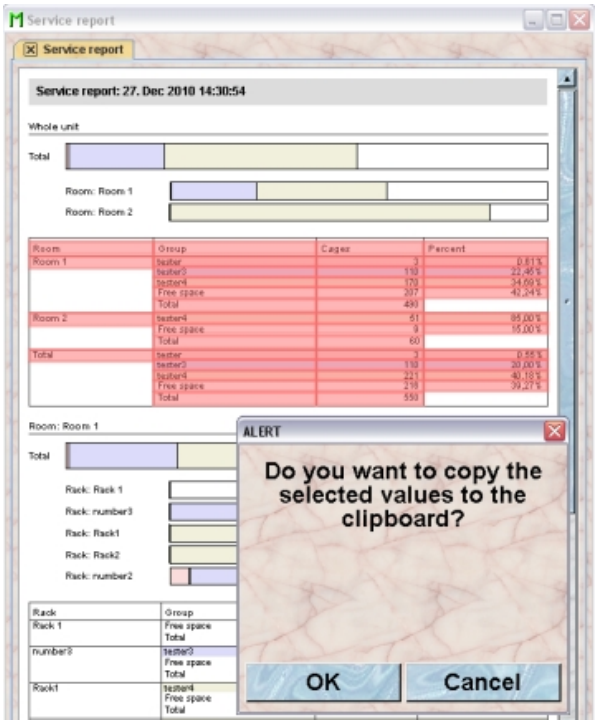
You will get a report for the service unit with tables containing information about the number of cages per group and a graphical representation of these numbers first for the whole unit and details for each room and below for each room with detatils for each rack.



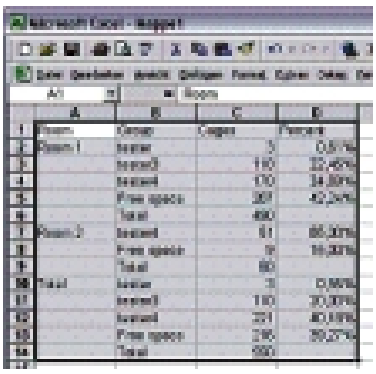
The colors are given for each group in the graphical representation and in the tables containing the numbers.
The reports can be printed and the numbers can be transferred to other programs (e. g. Excel) for further analysis. To select data from fact sheets to the system clipboard you just drag the mouse with pressed left mouse button over the data you want to copy.



After releasing the left mouse button the data which can be transferred to the system clipboard is shown with individual frames aorund every detected data element.



If you select "**OK**" in the dialog the data elements are transferred to the system clipboard in a way that they are available for the paste operation in other programs (e. g. Excel)

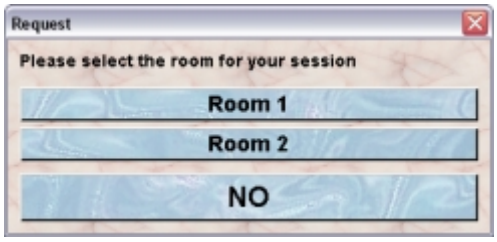


28.3 Working as Caretaker of the Service group

28.3.1 Logging in

During the automatic creation of the service group no caretaker is created for the service group. These users have to be added by the head of the service group as described earlier.
In the Login dialog you type in the login data.

There is a big difference to the login procedure of users from regular groups. After login in regular groups all the active objects are fetched from the server and used by the client. This is not possible for the service group because the service group has no mice, cages and so on. Rather the caretaker of the service group has to use the objects from different groups. This would lead to a big problem because this would mean that in this case all objects from all groups would have to be transferred to the client. Therefore Mausoleum uses a different approach. The caretaker has to specify during login which room will be used for this session. This is done using a dialog offering the choice between the rooms which are defined in the service group at the moment. This choice will be presented as dropdown list or as buttons if less than 5 items are available.



After selecting the room, all the active objects necessary for work in this room are collected from the regular groups and the service group and the usual startup procedure is performed.
The client will get informed about all changes which are affecting the data in the selected room as you are used to. Also the users of a regular groups will get notified upon every change of their data which is invoked by the caretaker of the service group. Data from other rooms will not be presented in this client.

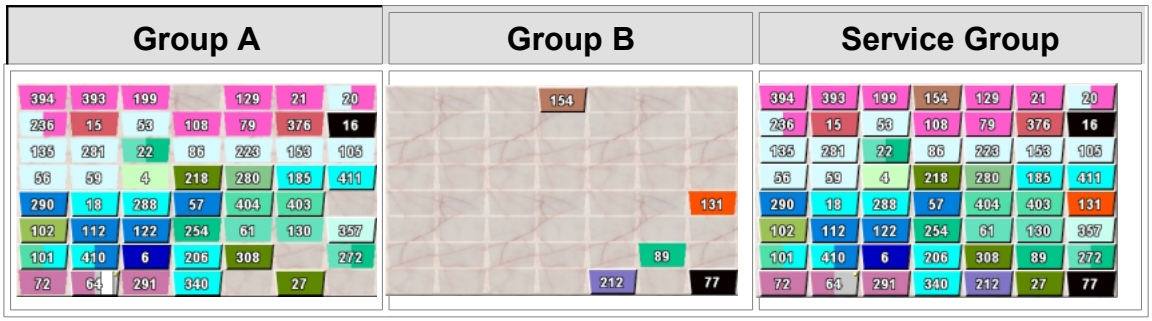
28.3.2 Differences to regular Mausoleum clients

The work in the client of a caretaker of the service group is very similar to the work in a client from a regular Mausoleum client. There are certain differences though.

Only one room: One difference was mentioned in the previous paragraph. A craetaker of the service group always sees only the objects (mice, cages) which are located in the room the user defined at the beginning of the session.

More than one group: Another general difference is that the caretaker of the service group can see objects from different groups if they have mice or cages in the room of the session.

You can see this behaviour clearly in this representation of a rack which is shared between groups A and B

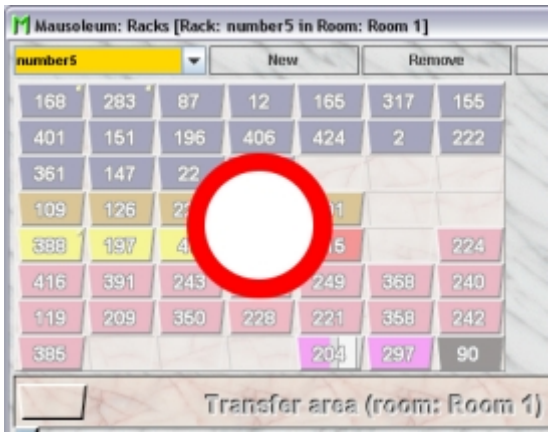


The users of the regular groups can see only the cages of their group. They see that certain spots of the rack are occupied by cages of another group but they cannot see the contents of those cages. The caretaker of the service group however has full access to all the data of the cages which are located in the racks in the sepcified room.

Setting of attributes: Because the caretaker of the service group has access to the mice of different groups there can arise certain conflicts if attributes of the mice are going to be changed. E. g. the line of a mouse can be set only to a line of the group the mouse belongs to. Therefore the caretaker cannot set the line if mice from different groups are selected. The same is true for setting the strain, genotype or license. These attributes can only be set if objects from one single regular group are selected.

Adding tasks: A similar difference is present if you want to add a task to mice from different groups. You can do so but you can only select from the Mausoleum-defined standard procedures. If the mice do not belong to a single regular group, none of the special standard procedures defined in a group can be used. This is only possible if all the selected mice belong to a single regular group.

Dragging of mice and cages: The caretaker of the service group - as usual - can drag cages or mice to the graphical representation of the rack in the rack window thereby defining a new position for the selected cage or the new cage for the mice. But there aere a few restrictions.
One major obvious restriction is that in one cage there can be only mice from one single regular group. Therefore dragging of mice is only possible if all the selected mice belong to a single regular group. Otherwise no target can be selected. They can be dragged only the pool area which does not lead to any consequences for the data.
Another restriction is that a cage from one group can be dragged only to a rack which is available for this group. This can happen if more than one rack is present in the room selected for the session and the group of the cage hasn't got access to all of them. If the caretaker of the service group now tries to drag the cage or mice to a rack which is not available for the respective group, the display of the rack changes indicating that dragging isn't possible:



Creating new mice: The service group doesn't contain any mice. All mice belong to one of the regular groups which have access to the room of the actual session. Therefore if the caretaker of the service group creates new mice the group to which these mice belong have to be specified. The dialog has therefore a selection field on top where the group has to be chosen.

Creating new cages: The service group also doesn't contain any cages. All cages belong to one of the regular groups which have access to the room of the actual session. Therefore also if the caretaker of the service group creates new cages the group to which these cages belong have to be specified. The dialog has therefore a selection field on top where the group has to be chosen.