

The - Manual

<https://medma.lavan-os.de>

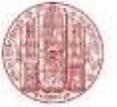




Imprint



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1 General information

- ✓ Professional livestock management software
- ✓ All data available at a central location
- ✓ Web-based application that can be accessed from anywhere
- ✓ Terminal device with Internet access and suitable web browser required
- ✓ 2 Interfaces
 1. Desktop interface for scientific and administrative activities
 2. Animal room interface for working directly on the animal (optimized for touch pads)
- ✓ Optimal visualization with rack view
- ✓ Implementation of animal welfare requirements (EU Directive 2010/63/EU)



LAVAN test system

To test the different processes please use the test system exclusively!
The test system is highlighted in yellow and can be found under the following link:
<https://medma-testsystem.LAVAN-os.de/login/index>



LAVAN
by Omikron Systems

User Name:

Password:

[Forgot password?](#)

Projects (desktop) Animal room (touch)

All tasks in the desktop and animal room interface can be played through with your own animals without any actual change in LAVAN!

1.1 Which web browser do I need for LAVAN ?

✓ Please use:

- ✓ Apple Safari
- ✓ Google Chrome
- ✓ Chromium
- ✓ Microsoft Edge
- ✓ Opera



In the browser you can change the language to English via "Settings > Advanced > Languages".

– Please do NOT use:

- Mozilla Firefox
- Internet Explorer



→ This may lead to display and operating problems!

1.2 Login under <https://medma.LAVAN-os.de/>

You will receive access data via email as soon as you have been added to a project licence.



User Name:

Password:

[Forgot password?](#)

Forgot your password? → No problem!

Projects (desktop)

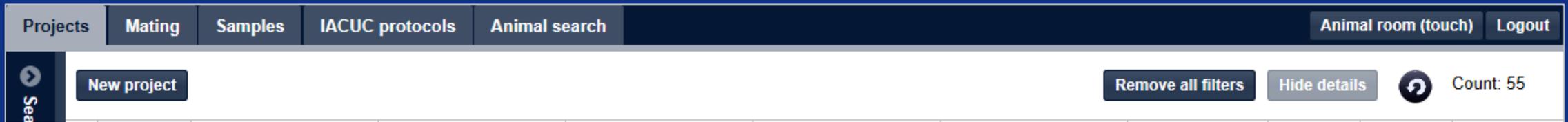
Animal room (touch)

Click here for information about animals, projects and/or project licences.

Click here to perform work processes such as animal care and marking. Also, information about sick and abnormal animals.

1.3 Desktop vs. Touch

A) Desktop



Here you have an insight into all projects of a working group including the project licences. Projects are created by the groups themselves and project licences by the admins. A project licence can contain several projects. For example a breeding project and an experimental project.

In addition you can plan mating and sampling and carry out an extended animal search.

1.3 Desktop vs. Touch

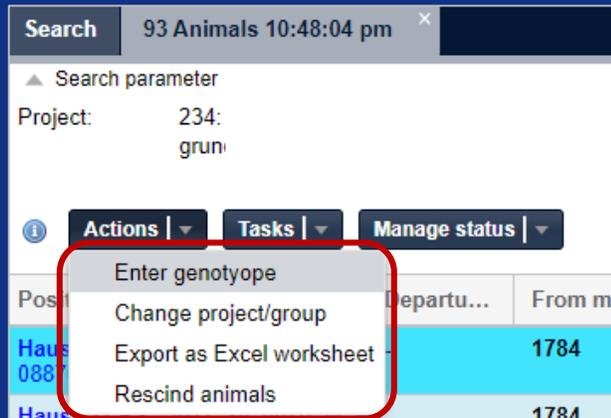
The screenshot shows a web application interface. At the top, there is a navigation bar with several tabs: 'Projects' (highlighted with a red box), 'Mating', 'Samples', 'Project licences', 'Animal search', 'Animal room (touch)', and 'Logout'. Below the navigation bar, there is a search sidebar on the left with a 'Search' button and a 'New project' button. The main content area displays a table of project data. The table has columns for 'Pr...', 'Title ↓', 'Purpose', 'Org unit', 'Project lead', '1st contact ...', 'Species', 'Alive', 'De...', and 'Ar...'. The table contains several rows of data, with the first row showing 'Maus' with 6 living and 2 dead animals. A red arrow points from the 'Projects' tab to the table. Another red arrow points from a text box to the '1' in the 'Alive' column of the second row.

Pr...	Title ↓	Purpose	Org unit	Project lead	1st contact ...	Species	Alive	De...	Ar...
609						Maus	6	2	
556						Maus	1	0	
260						Maus	0	161	
234						Maus	93	61	
227						Maus	100	59	
201						Maus	68	52	

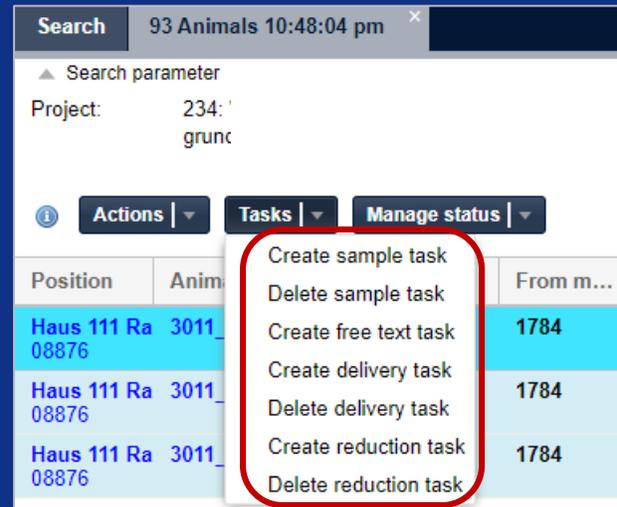
All projects of your own working group are displayed here.

The blue numbers represent all living and dead animals in a project. If you click on the number you will be forwarded directly to them. Then you can perform different actions or create (or delete) tasks.

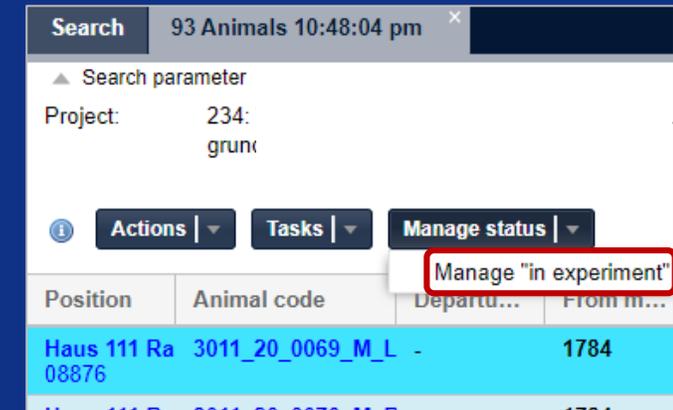
1.3 Desktop vs. Touch



After selecting the animals you can perform various *Actions*...



... or create / delete different *tasks*...



... or manage the status.

1.3 Desktop vs. Touch

B) Touch



Buildings

- Haus 111
1 Units
- Haus 21
2 Units
- Haus 8
1 Units
- Maybachstrasse
1 Units
- Tridomus
2 Units

Tasks

- Mating tasks
- Samples
- Free text tasks
- Cages to be emptied
- Reduction tasks
- Delivery tasks
- Resolve conflicts
- Wean pups
- Pups expected
- Husbandry
- Mark animals (without sampling)
- Find ill animals
- Find abnormal animals
- Print animal card
- Add new animals

Animal code, e.g. 41b 1: Animal code search Detailed search

Cancel

Here you get directly to the animal houses to the respective racks and cages.

By selecting a task all cages in a house/room/rack in which the task is to be completed are displayed.

1.4 Project licences

Here you can see all project licences on which you were reported.

New project licence

Remove all filters Hide details Count: 5

	Title	Dep...	Inte...	Org ...	Aut...	Aut...	App...	Aut...	Spe...	Start	End	Inv...	Dep...	A...
64														
77														
124														
141														
204														

Project licence

Project licence ID: 64

Animal approved/ booked: 252/ 12

Approved animal count:	252
Booked animal count:	12
of which departed:	12

Click here if you want to create a new project licence. This task is reserved exclusively for administrators or animal welfare officers!

If you click on the pen you can view the project licence but not edit it.

If you select a project licence so that it is highlighted in grey you can view information about it and the assigned projects, employees, animal numbers and attachments on the right-hand side.



1.4 Project licences: Assign strains to a TVA / application

- It is now also possible to add “strains in the application” to an animal experiment application (TVA).
- The information is not mandatory.
- The function can be found in the TVA-Editor in the lower left area.
- The entry is currently intended for information purposes only and should help to ensure that only designated strains are used.

New project licence

Approved:

Authorization number:

Authorised:

Authorization no. (short):

Start:

End:

Purposes* breeding with licence
 experiment
 experiment with breeding

Org. units*

Species*

Animal count

Total	<input type="text" value=""/>	⊖ ⊕
SV2 (Gering/Mild)	<input type="text" value="0"/>	⊖ ⊕
SV3 (Mittel/Moderate)	<input type="text" value="0"/>	⊖ ⊕
SV4 (Schwer/Severe)	<input type="text" value="0"/>	⊖ ⊕
0 (Keine/no)	<input type="text" value="0"/>	⊖ ⊕
SV1 (Keine Wiederherstellung der Lebensfunktion/Non-Recovery)	<input type="text" value="0"/>	⊖ ⊕

Strains in project licence

Strains in project licence:

- ✘ 111, Maus, BALB/cAnNCrl, BALB/c
- ✘ 230, Maus, NOD.Cg-Prkdc<scid> IL2rg<tm1Wjl>/SzJZtm, NSG

1.5 Create strains together with admins

- ✓ Without strains you cannot record animals!
- ✓ Think about the following points before the appointment:
 - ✓ Which strains must be created in LAVAN?
 - ✓ Which genes (+ alleles) are modified in this strain?
 - ✓ Contact the admins and arrange an appointment to create your strains (+ genes, + alleles) together with them.
- ✓ Admins: Alexia Giannakopoulou and Rahef Meriem Ouerdani

1.5 Create strains together with admins

There are several ways to obtain the relevant animal information:

1. Possibility: if the animal line can be obtained from *The Jackson Laboratory*



 <https://www.jax.org/>

B6.129X1-Gt(ROSA)26Sor^{tm1(EYFP)Cos} / J POPULAR

Stock No: **006148** R26R-EYFP

Congenic, Targeted Mutation

OVERVIEW DETAILS **GENETICS** DISEASE/PHENOTYPE



Genetics

Gt(ROSA)26Sor^{tm1(EYFP)Cos}

Allele Symbol: **Gt(ROSA)26Sor^{tm1(EYFP)Cos}** MGI

Allele Name: targeted mutation 1, Frank Costantini

Allele Type: Targeted (Conditional ready (e.g. floxed), Reporter)

Allele Synonyms: Gt(ROSA)26Sor-StopFlox-EYFP, LSLYFP, R26-EYFP, R26eYFP, R26R-EYFP, R26R^{oxYFP}, R26R^{YFP}, R26R^{oxYFP}, R26R-EYFP, R26RYFP, R26-stop-EYFP, R26Y, R26YFP, R26-YFP, R26YY, R-EYFP, ROSA^{EYFP}, ROSA26^{lox}-STOP^{ox}-YFP, ROSA26^{lox}-STOP^{ox}-YFP, Rosa26^{LSL-YFP}, Rosa26^{Moplox1YFP}, Rosa26^{YFPStop}, ROSA26-EYFP, Rosa26-eYFPTM, ROSA26-LoxP-STOP-LoxP-EYFP, ROSA26-loxP-Stop-loxP-YF, ROSA26-lsl-EYFP, Rosa26R(YFP), ROSA26R-YFP, Rosa26-Stop^{fl}-YFP, ROSA26-stop-YFP reporter, Rosa26YFP, ROSA26-YFP, Rosa26-YFP^{fl}, Rosa26-YFP^{fl}, ROSA-LSL-YFP, ROSA-YFP, Rosa-YFP^{fl}, RYR, YFP

Gene Symbol and Name: **Gt(ROSA)26Sor** MGI - gene trap ROSA 26, Philippe Soriano

It is sufficient to pass the *Stock N°* to the admins. Via the link to the homepage you will then receive all necessary information of the strains.

1.5 Create strains together with admins

There are several ways to obtain the relevant animal information:

2. Possibility: Animal line can not be obtained from Jackson and is not published

Official name of the line	B6.Rag2tm1Fwa Ptprca
Line name (short, lab version, created by investigator)	Rag2 x Ly5.1
^{1st} Gene link	http://www.informatics.jax.org/marker/MGI:97849
^{1st} Allele name	http://www.informatics.jax.org/allele/MGI:2654906
^{2nd} Gene link	http://www.informatics.jax.org/marker/MGI:97810
^{2nd} Allele name	http://www.informatics.jax.org/allele/MGI:4819849



For each mutation, which is present in the animal, a link for the corresponding gene and allele must be sent to the admins.

Gene and allele information can be found on the following websites:
mice <http://www.informatics.jax.org/>
rats <https://rgd.mcw.edu>

Caution! Forward table with all relevant information and the transgenic data sheet to admins in advance!

1.5 Create strains together with admins

There are several ways to obtain the relevant animal information:

3. Possibility: animal line cannot be obtained from Jackson but is published

Complete line name (created by investigator)	FVB,Tg(Nanog-GFP,Puro)1Yam
Short name (lab version, created by investigator)	FVB,NanogGFP tg
Gene link	http://www.informatics.jax.org/marker/MGI:1919200
Allele name (created by investigator)	Tg(Nanog-GFP,Puro)1Yam



In this case, the line name (complete and short name), a link to the gene and additional information about the location of the mutation, the construct, and the scientist providing the line must be listed in a table.

Gene and allele information can be found on the following websites:
mice <http://www.informatics.jax.org/>
rats <https://rgd.mcw.edu>

Caution! Forward table with all relevant information and the transgenic data sheet to admins in advance!

Example of the table for the admins

AG:	
Line name (lab version):	Rag2 flox
Official name of theline:	C57BL/6-Rag2tm1Cgn/J

Gene:	Rag2
International nomenclature	Rag2
Former names	Rag-2
Origin	Maus
MGI n° für Maus	97849
RGD n° für Ratte	
Gene ID	19374
Comment	Symbol: Rag2 Name: recombination activating gene 2 Synonyms: Rag-2 Feature Type: protein coding gene MGI: 97849 NCBI Gene: 19374

Allele:	Rag2tm1Cgn
International nomenclature*	Rag2tm1Cgn
Former names	RAG-2fl
Origin*	Mouse and other organisms
MGI n°	2654906
RGD n°	
Gene ID	
Comment	Symbol: Rag2tm1Cgn Name: recombination activating gene 2; targeted mutation 1, University of Cologne Synonyms: RAG-2fl Gene: Rag2 Location: Chr2:101624718-101632529 bp, + strand Genetic Position: Chr2, 53.87 cM

1.6 Create new projects

- ✓ Several projects can be assigned to one project licence.
- ✓ Breeding is managed in breeding projects. If the line has any severity, a project licence is required for breeding.
- ✓ Experimental animals are moved to experimental projects.
- ✓ Experimental animals as defined by law are always in projects requiring a project licence and have the status "*in experiment*".
- ✓ Animals can be moved to projects with licences even before the experiment starts.
- ✓ As soon as the experiment begins, animals have to be moved to projects with a licence.
- ✓ As soon as the trial is running they are given the status "*in experiment*".
- ✓ Access to the animals is only allowed to project staff, admins and caretakers.
- ✓ Project members must be listed on the project licence. Otherwise the project will appear as "*against the rules*".
- ✓ No laboratory animals as defined by the law are allowed in projects that do not require a permit.



1.6 The strain code of genetically modified strains is now indicated by underlining

DESKTOP

- Administrators define in the strain administration whether strains are genetically modified **and** contaminated.
- The breeding of such animals is usually subject to approval and must therefore be carried out in breeding projects that requiring approval.
- In order to make this strains information easily accessible, all strains codes of such strains are marked by underlining in this version.
- This applies to all animal lists, such as desktop, animal rooms, animal lists or the representation of animals in processes and the line details.

Strain/Br
<u>230</u> NOD.Cg-Prkdc<scid> IL

Stamm/Rasse
<u>230</u> NOD.Cg-Prkdc<scid> IL2rg<tm1Wjl>/SzJZt m

1.6 Create new projects

Here you can see all projects that belong to your own working group. Project in grey are not accessible.

Projects Mating Samples IACUC protocols Animal search

26:00 min

New project Click here if you want to create a new project.

Remove all filters Hide details Count: 21 Project details Group details

Proje...	Title	Purpose	Org. unit	Project lead	1st contact person	Species	Alive	Depa...	Archi...
							9	12	
							0	49	

If you click on the pen you can edit the project.

For a new project there are different options:

1. Breeding – no licence required
2. Breeding - with licence
3. Experiment
4. Experiment with breeding
5. Husbandry

The blue numbers represent all living and dead animals in a project. If you click on the number, you will be forwarded directly to them.

If you mark the project so that it is grayed out, you can view *project* and *group details* on the right side.

1.6 Create new projects

The screenshot shows a 'New project' form with the following fields and sections:

- 0** Project-ID: Will be generated on save...
- 1** Archived:
- 2** Title*: G-05/19 ...
- 3** Purpose*: Please select... (highlighted with a red box and arrow)
- 4** Project licence: Enter search term...
- 5** Org unit*: Enter search term...
- 6** Species*: Enter search term...
- 7** Days until weaning: Use value of species
- 8** Strains in project: Enter search term... (No strains have been added to this project)
- 9** Procedure regulations activate: Target strain: Enter search term...
- Animal marking regulations Markings are mandatory: Default marking type: Please select...

A red callout box on the right contains the following instructions:

- 0:** Will be assigned automatically
- 1:** G-No. in front; enter title (in case of two animal species approved in licence, please list animal species in brackets after the title)
- 2:** Select purpose
- 3:** Select project licence if purpose (2) is *Experiment*
- 4:** Select Org unit (work group)
- 5:** Select animal species
- 6:** Do not enter anything! Is stored in the system
- 7:** Select strains that belong to the project and may also be used for mating
- 8:** For projects with the purpose (2) *Breeding*, activate it and specify target strain number
- 9:** Select markings of the animals. File is stored for the work groups (by default, "1-99 Löcher und Kerben")

→ Continue on the next page

1.6 Create new projects

New project

Project

Project-ID: Will be generated on save...

Archived:

Title:* Please enter...

Purpose:* **10: Please enter the contact persons and project staff as listed in the project licence.**

Project licence

Org unit:* **11: It is possible to enter staff such as MTAs who have no contact with animals.**

Species:* **12: If you are genotyping select the type and time of sampling.**

Days until v

Strains in p

No strains

Procedure activate:

Target strain

Animal marking regulations

Markings are mandatory:

Default marking type: Please select...

10: Please enter the contact persons and project staff as listed in the project licence.

11: It is possible to enter staff such as MTAs who have no contact with animals.

12: If you are genotyping select the type and time of sampling.

13: All filled in? Select Save.

If the system stops or the new project appears in red on the overview page → something has been entered incorrectly (!!!)

Staff

Project lead:* Enter search term...

1st contact person:* Enter search term...

2nd contact person: Enter search term...

3rd contact person: Enter search term...

Project staff: Enter search term...

Project staff without animal contact: Enter search term...

No employees without animal contact have been added to this project

Genotyping rules

Genotyping: not required

Sample type: Please select...

Age in days: Please enter...

Comment

Please enter...

Save Cancel

10

11

12

13

1.7 Add new animals



Caution!
Scientists alone cannot add new animals! This is only possible together with the animal care takers!

Position 46

Animal code, e.g. 41b 12

Animal code search

Buildings Haus 111 Haus 111 Zucht Haus 111 Raum 13 Position 46

	A	B	C	D	E	F
1	08816 0 / 1 / 0 360Bf	08817 1 / 0 / 0 415Bf	08818 0 / 3 / 0 378Bf	08819 4 / 0 / 0 384Bf	08820 2 / 0 / 0 384Bf	08821 1 / 0 / 0 387Bf
2	Navigate via the animal room to the desired position. Now click on the task <i>add new animals</i> . Then select a free position.					
3						
4						
5	07370 360Bf	07170 375Bf	empty	empty	17070 382Bf	07470 382Bf
6	08846 1 / 0 / 0 378Bf	08847 1 / 0 / 0 383Bf	08848 0 / 5 / 0 368Bf	08849 empty	08850 empty	08851 1 / 0 / 0 377Bf
7	08852 2 / 0 / 0 366Bf	08853 2 / 0 / 0 366Bf	08854 0 / 1 / 0 366Bf	08855 0 / 1 / 0 369Bf	08856 3 / 0 / 0 383Bf	08857 0 / 2 / 0 383Bf
8	08858 empty	08859 empty	08860 empty	08861 1 / 0 / 0 388Bf	08862 empty	08863 1 / 0 / 0 378Bf

Tasks

- Mating tasks (0)
- Samples (0)
- Free text tasks (0)
- Cages to be emptied (2)
- Reduction tasks (10)
- Delivery tasks (0)
- Resolve conflicts (0)
- Wean pups (0)
- Pups expected (1)
- Husbandry (0)
- Mark animals (without sampling) (2)
- Find ill animals (1)
- Find abnormal animals (1)

Print animal card

Add new animals

when purchased, not for neonates!

1.7 Add new animals



Add animals at position 08850

Add new animals:

Animal count*

Species*

Maus

Enter *Animal count* and *species*.

Press *Next*.

Add animals at position 08850

Please select the project that the animals belong to.

Project*

Enter the project number here. If you click next to the word *Search* all projects will appear and you can select the desired one.

Search

195:

197:

198:

1.7 Add new animals



Add animals at position 08850 Cancel

Please select an animal group within the project that the animals should be added to.

Animal group in project 195: G - 245/16 -

Select the project group here and confirm with *Next*.

195: G - 245/16 - Experim... ✓

1.7 Add new animals



Add animals at position 08850 ✕ Cancel

Date of birth (mm/dd/yyyy)*	01	✕ / 01	✕ / 2020	✕
Comment				
Cage type	Greenline GM500			
Origin*	Charles River (O1)			
Strain*	1000			
Gender*	male			
Generation				
F				
N				
G				

Enter the information about *Date of birth*, in *Comment* the delivery date or name of parents, *Origin*, *Strain* and *Gender*.

Press *Next*.

▶ Next

1.7 Add new animals



Add animals at position 08850

Animal count:	1
Origin:	Charles River (01)
Species:	Maus
Project:	195: G - 245/16
Animal group in project:	195: G - 245/16
Date of birth:	01/01/2020
Comment:	
Strain:	1000: C57BL/6NRJ
Gender:	male
Generation:	

Is the data correct?

Check entries again and then confirm or change them.

✓ Correct✗ No, adjust inputs

1.7 Add new animals



Add animals at position 08850

Would you like to mark all unmarked animals at this position?

The position now contains the animals listed below.

Position	Animal code	Project	Strain/Breed
Haus 111 Raum 13:46:6E (08850)	1000_20_0366_M_		

M:In mating P:Pups expected since x days W:In waiting period X:In contact Ill Was ill Abnormal Was abnormal Has record(s) Has free text task Sample Task(s) Due sample task(s) Sample(s) taken -/In experiment X Reduction task X Reduction task due today X Reduction task overdue

Here you can mark the animals directly or do it later.

✓ Mark animals ✗ No, later

1.7 Add new animals



Add animals at position 08850

Would you like to add further similar animals? You will be able to continue the "Add animals" process at another position reusing the data entered

Here you have the possibility to add more animals. The program has saved the entries of the previous entry. This means that you only have to change individual parameters if necessary.

Otherwise you confirm that the recording is complete.

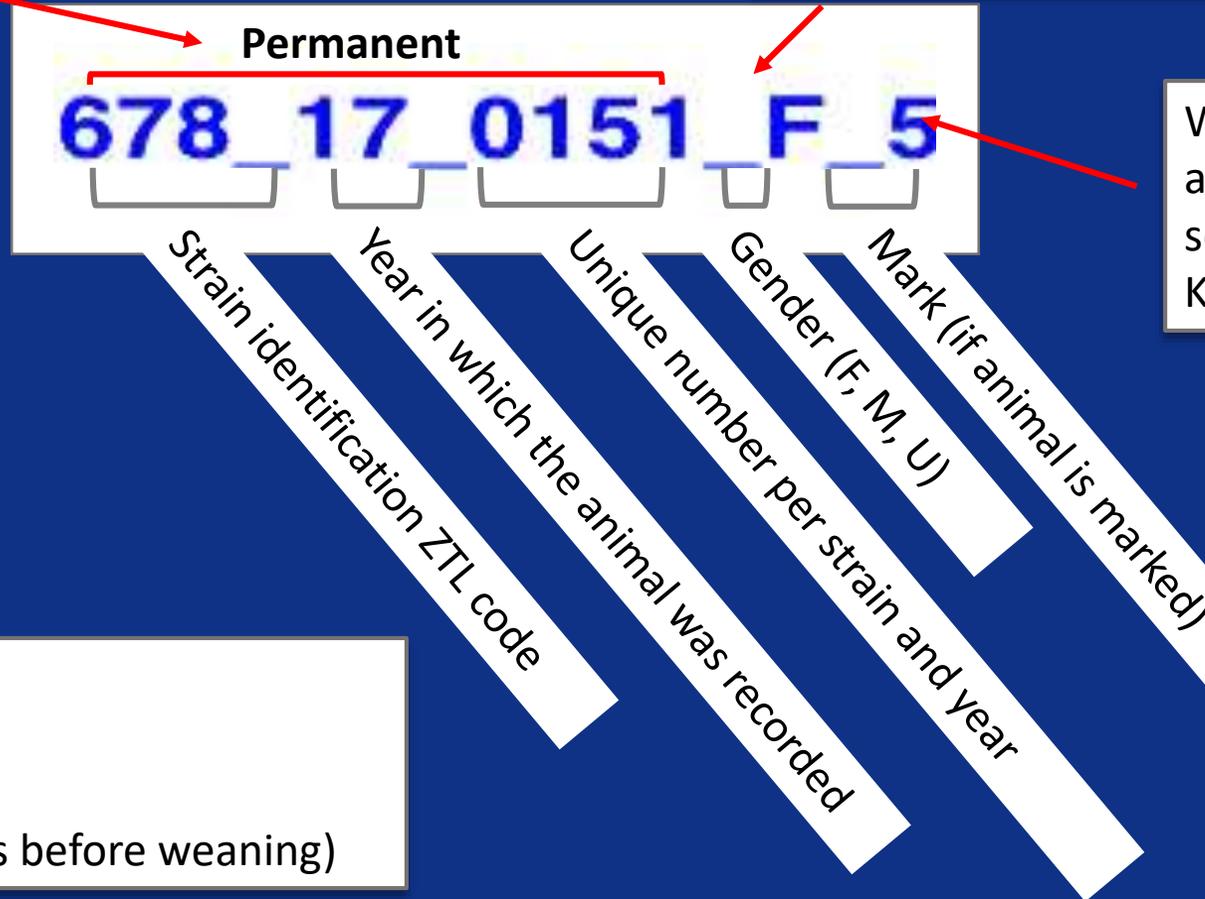
✓ Add similar animals

✗ No, I am done

1.8 Animal code - meaning of the numbers

Automatically assigned by LAVAN

Automatically when gender is specified at weaning



Working group specific according to marking scheme ("1-99 Löcher und Kerben" by default)

Possible genders:

M = Male

F = Female

U = Unknown (for young animals before weaning)

1.9 Cage informations



Search 68 Animals 9:13:20 pm

▲ Search parameter

Project:

Actions | Tasks | Manage status |

Position	Animal code
Haus 111 Raum 13:49:6B 09027	1170_20_0035_M_X

Building 111 room 13:rack 49:position 6B
Cage number 09027

09027
1 / 0 / 0
201Bf

Cage number 09027
1 male/0 female/ 0 unknown
Project number 201 Bf: breeding, licence free

06600
1 / 0 / 0
374E

Cage number 06600
1 male/0 female/ 0 unknown
Project number 374 E: experiment

Caution! Each cage has its own unique number, which is defined by its position in the rack.

1.10 Search for animals

Option 1

Projects Mating Samples Project licences **Animal search**

New project Remove all filters Hide details Count: 54

Proje...	Title	Purpose	Org unit	Project lead	1st contact person	Species	Alive.↓	Depa...	Archi...
232						Maus	112	37	
225						Maus	105	82	
227						Maus	100	59	

Select live or dead animals from the corresponding project.

Search 112 Animals 9:26:28 pm

Search parameter
Project: 232

Actions Tasks Manage status

Position	Animal code ↓	Departure information	From mating
Haus 111 Raum 13:52:7A 09168	3012_20_0056_F_LLR		
Haus 111 Raum 13:52:7A 09168	3012_20_0055_F_LR		
Haus 111 Raum 13:52:7A 09168	3012_20_0054_F_RR		
Haus 111 Raum 13:52:7A 09168	3012_20_0053_F_LL		

Sort ascending
Sort descending
Columns
Remove all filters
Filters Enter filter text...

Select filter in animal code and type in number.



1.10 Search for animals



Option 2

Projects Mating Samples Project licences Animal search 30:00 min Administration Animal room (touch) Logout

Search

Search Reset form

▲ Project information

Project: Enter search term...
Filter projects: not archived

Animal group: Enter search term...

Source project: Enter search term...
Filter source projects: not archived

Org. unit: Enter search term...

Species: Enter search term...

Strain: Enter search term...

Project licence: Enter search term...
Filter project licences: not archived

▲ Animal information

Departed: Please select...

With legal framework: Please select...

Departure category: Please select...

Cause of departure: Please select...

Departure date: Please enter... To: Please enter...

Gender: Please select...

Registration date: Please enter... To: Please enter...

Date of birth: Please enter... To: Please enter...

Age (in weeks): Please enter... To: Please enter...

Caution! When selecting a room please check the preceding building number!

▲ Location information

Building: Enter search term...

Unit: Enter search term...

Room: Enter search term...

▲ Breeding status information

Breeding animal: Please select...

In mating: Please select...

Pups expected: Please select...

Known data, such as project, source objects or location data and much more can be used here for the search.



1.10 Extension of search for animals to include severity parameters and acquisition date

DESKTOP

➤ In the animal search, the following parameters are now also available in desktop and animal room "animal search":

- Animal status information:
 - *Load*: documented/undocumented
 - *Maximum severity* and *Latest severity*.

Animal status information

Severity:	documented
Maximum severity:	Please select...
Latest severity:	Please select...
Experiment:	Please select...
Weaned:	Please select...
rescinded animals only:	<input type="checkbox"/>

- Breeding status information:
 - Such as *Visibly carrying*, can be added as a search criterion.

Breeding status info

Breeding animal:
In mating:
Pups expected:
Visibly carrying:
Has descendants:
Cross breed number:
With parents:

- In addition, the animal search for *Registration date* with two input fields: *from* and *to* can limit the number of animals.

Gender:	Please select...		
Registration date:	Please enter...	To:	Please enter...
Date of birth:	Please enter...	To:	Please enter...
Age (in weeks):	Please enter...	To:	Please enter...

1.10 Search for animals



Option 3

The screenshot shows the top navigation bar with a home icon, a back arrow, and a dropdown menu currently set to "Buildings". To the right is a search bar containing the text "Animal code, e.g. 41b 12". Further right are buttons for "Animal code search", "Detailed search", and a power icon. Below the navigation bar, a list of buildings is visible: "Haus 111 (1 Units)", "Haus 21 (2 Units)", "Haus 8 (1 Units)", and "Meybachstrasse". A "Tasks" dropdown menu is open, showing options: "Mating tasks", "Samples", "Free text tasks", and "Cages to be em...". A red box highlights the search bar, and a red arrow points from it to a text box.

Here the strain number and/or the consecutive LAVAN animal number can be entered.

The screenshot shows the "Detailed search" screen. The search bar contains "2059 50". Below the search bar, it says "Detailed search 4 animals 21:40:56". The search parameters are listed as "Animal code: 2059 50". There is a "Close result" button. Below the parameters is a toolbar with icons for "All", "None", "Register departure", "Move animals", "Mark animals", "Experiment options", "Additional options", and "Desktop". At the bottom is a table with columns: "Position", "Animal code", "Project", "Strain/Breed", "Genotype/G...", "Age", and "Status".

Position	Animal code	Project	Strain/Breed	Genotype/G...	Age	Status
Haus 111 Raum 13:50:3A (09068)	2059_19_0050_M_289				321 (45) (0y, 10m, 15d)	
Haus 111 Raum 13:50:3D (09071)	2059_20_0050_M_				78 (11) (0y, 2m, 15d)	

E.g.: all animals that have a 50 in their "name" will appear, including those that are already dead (red).



1.10 Optimizing the animal search over the crossing number "from mating"

DESKTOP



Option 4

- The crossing numbers "from mating" in animal lists on the desktop surface can now be selected.
- A search for all animals with this crossing number is carried out (both offspring and parents of this mating).

Position	Animal code	Departure information	From mating	Project
Haus 111 Raum 11:05:1B 06957		-	5852	

2 Applications exclusively for Admins

There is an admin interface, where all administrative work is carried out, such as ...

1. Creating users and work groups
2. Create project licences
3. Create strains together with scientists (+ genes, + alleles)
4. Inspection according to animal welfare aspects

3 Applications for scientists

- Create strains together with Admins (+genes,+ alleles)
- Create projects and enter staff members
- Please make an appointment with Julia Hartenburg (house 111) or Petra Prochazka (house 21/Tridomus)
 - Record instruction at the iPads and/or enter animals into LAVAN

3 Applications for scientists (cont.)

1. Move animals
2. Switch projects
3. Mating task
4. Wean pups
5. Reduction task
6. Free text task
7. Sample task
8. Genotyping
9. Record abnormalities / document illness
10. Set animals "in experiment"
11. Define severity at the departure of animals
12. Resolve conflicts
13. Archive expired projects
14. Delivery task (transport)
-  15. Body mass tracking (synonym: weight tracking)
-  16. Recording schemes for all users: in the animal details area under "Records"
-  17. A status recording, e.g.: "Visibly carrying" can be set.

3.1 Move animals



236Bf:

✓ All	⊗ None	✗ Register departure	🏠 Move animals	👤 Mark animals
Position	↑	Animal code		
Haus 111 Raum 13:49:1A (08996)		2052_19_0029_F_236 LL		
Haus 111 Raum 13:49:1A (08996)		2052_19_0039_F_254 I		

First select the animal(s) to be moved (turquoise) and then click on *Move animals*.

Move animals

To which position should the animals be moved?

Target position number*

Select from rack

Click *Select from rack* and then select the cage into which the animal should be moved to.

3.1 Move animals



Caution! If you want to put together animals of different gender the system warns you of a possible mating!

To further minimize incorrect entries, a warning is displayed when moving animals to a position in another room. After clicking on “*Continue anyway*” moving is still possible. This is to prevent unintentional mistakes, e.g. by shifting numbers.

Moving (from → to): 08996 → 09022

Do you want to move the animals?

After moving, the following animals will be at the target position:

Position	Animal code
Haus 111 Raum 13:49:1A (08996)	2052_19_0029_F_236 LL

M: In mating P: Pups expected since x days W: In waiting period X: in conflict III: Was ill task T: Sample Task(s) D: Due sample task(s) q: Sample(s) taken -N: In experiment X: Red

Then confirm or cancel the process.

✓ Yes, move animals ✗ No, do not move

3.2 Switch project



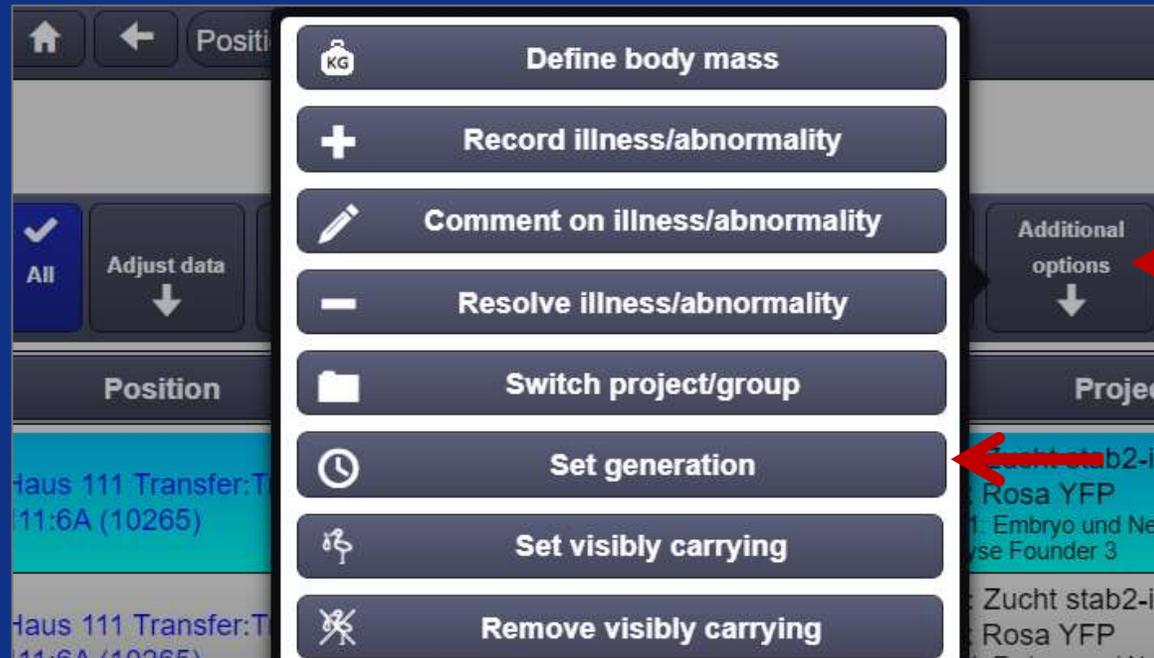
First select the animal(s) from which the project is to be changed, then click on *Additional options* and select *Switch project*.



3.2 Switch project: Optimization, omission of one confirmation step when setting the generation



- A confirmation step has been removed after entering information on the generation of animals (Set generation).
- Generation information can easily be corrected by re-entering it.



First select the animal (s) of which the generation is to be changed (turquoise), then click on *Additional options* and select *Set generation*.



3.2 Change project:

New menu item in the animal room: "Adjust data"



➤ The following functions are bundled under the new menu item:

- Adjust animal data
- Revert departure
- Rescind animals



3.2 Switch project



Change project/group Cancel

Animal count: 1

Project* 236:

Search 237

237:

Next

↑

↓

Enter new project number and click on *Next*.

3.2 Switch project



Projects Mating Samples Project licences Animal search

New project Remove all filters Hide details Count: 54

Proje...	Title	Purpose	Org unit	Project lead	1st contact person	Species	Alive.↓	Depa...	Archi...
232						Maus	112	37	
225						Maus	105	82	
227						Maus	100	59	

Select alive or dead animals from the corresponding project.

Enter the new project number (the *Animal group* changes automatically) and click *Change project/group* below.

Search 112 Animals 1:16:26 p

Search parameter

Project: _____

Actions | Tasks

Enter genotype

Change project/group

Export as Excel worksh...

Change project/group

Project:* 233: Animal group:* 233:

Position	Animal code	Departure...	From mati...	Project	Strain/Breed	Genotype	Generation	Age	Status
Haus 111 Raur 09077	3012_20_0043_	-	2150	232: 232:				91 (13) (0y:2m:30d)	

M:In mating P:Pups expected since x days W:In waiting period X:In conflict Was ill Abnormal Was abnormal Record(s) Free text task

Has due free text task Mating task Has due mating task Due sample task(s) Sample(s) taken In Experiment Reduction task

Reduction task due today Reduction task overdue Delivery task Due delivery task

Change project/group Back to animal search

First select the animal(s) from which the project is to be changed, then click on *Actions* and select *Change project/group*.

3.3 Mating task

Projects **Mating** 1 Project licences Animal search 30:00 min Administration Animal room (touch) Logout

Search and create mating tasks

Breeding project: Enter search term... 2

Crossbreed number: Please enter...

Animals of breeding project only: *

Search

New mating task

Count male: 0

Count female: 0

Remove all filters Males

Remove all filters Females

Strains of selected project

Target strain: -

Background strain: -

Allowed for mating: -

Males

Position	Animal code	From mating	Project	Strain/Breed	Genotype	Generation	Age	Status
----------	-------------	-------------	---------	--------------	----------	------------	-----	--------

Females

Position	Animal code	From mating	Project	Strain/Breed	Genotype	Generation	Age	Status
----------	-------------	-------------	---------	--------------	----------	------------	-----	--------

1. Select *mating* in the bar
 2. Enter breeding project number - confirm with Enter
- [*] This option is ticked by default. Remove if you wish to visualize animals from other projects

3.3 Mating task

Projects Mating Samples Project licences Animal search 25:00 min Animal r

Search and create mating tasks

Breeding project: 201. ...
Crossbreed number: Please enter **3**
Search

New mating task

Count male: 21
Count female: 21

Remove all filters Males
Remove all filters Females

Strains of selected project

Target strain: 1170: B6.(MF;129)-Rag2tm1Fwa
Background strain: 1010: C57BL/6
Allowed for mating: 1170: B6.(MF;129)-Rag2tm1Fwa

Males

Position	Animal code	From mating	Project	Strain/Breed	Genotype	Generation	Age
Tridomus Raum 1	1170_19_0045_M_05367	589					21 (31) 0y:7m:8d
Haus 111 Raum 1	1170_20_0035_M_09027	1787					06 (15) 0y:3m:14d
Haus 111 Raum 1	1170_20_0025_M_09030	909					55 (22) 0y:5m:3d
Haus 111 Raum 1	1170_20_0008_M_09032	913					70 (24) 0y:5m:18d
Haus 111 Raum 1	1170_20_0002_M_09033	914					71 (24) 0y:5m:19d
Haus 111 Raum 1	1170_20_0023_M_09034	905					59 (22) 0y:5m:7d
Haus 111 Raum 1	1170_20_0018_M_09035	910					59 (22) 0y:5m:7d
Haus 111 Raum 1	1170_19_0007_M_09036	-	201: I-19/21 Zuch	1170	Rag2ko:	-	253 (36) (0y:8m:9d)
Haus 111 Raum 1	1170_19_0060_M_589	589	201: I-19/21 Zuch	1170	Rag2ko:	-	198 (28)

Females

Position	Animal code	From mating	Project	Strain/Breed	Genotype	Generation	Age
Haus 111 Raum 1	1170_20_0039_F_09028	1787	201: I-19/21 Zuch	1170	Rag2ko:	-	106 (15) (0y:3m:14d)
Haus 111 Raum 1	1170_20_0040_F_09028	1787	201: I-19/21 Zuch	1170	Rag2ko:	-	106 (15) (0y:3m:14d)

3. Click *Search*: all males and females that have something to do with the project are displayed

4. reapply project filters in the gender field

4

3.3 Mating task

Projects Mating Samples Project licences Animal search 30:00 min

Search and create mating tasks

Breeding project: 201

Crossbreed number: Please enter...

Search

New mating task

6

Count male: 1

Count female: 1

Remove all filters Males

Remove all filters Females

Strains of selected project

Target strain: 1170: B6.(MF,129)-Rag2tm1Fwa

Background strain: 1010: C57Bl/6

Allowed for mating: m1Fwa

Males

Position	Animal code	From mating	Project	Strain/Breed	Genotype
Haus 111 Raum 1 09027	1170_20_0035_M_1787	5	201 201		

Females

Position	Animal code	From mating	Project
Haus 111 Raum 1 09046	1170_20_0030_F_909	5	201: 201:

- 5. Select animals for mating
- 6. Click *New mating task*

Caution! It is also possible to mate several females with one male at the same time. Just select several females in step 5. This should not be done via free text task!



3.3 Mating task



New mating task - Project 201: I-19/21 Zucht (Rag2 ko) Untersuchung grundlegende Funktionen des Immunsystems

Assign future animal groups

1170_20_0030_F_R:*

1170_20_0035_M_X:*

Pups:*

7

Additional information

Due on:* Please select...

Comment: Please enter...

Information on mating tasks

Determine the groups for the mating partners and expected offspring. Once saved the mating task is displayed in the animal room. In case you want to modify/delete it, navigate to the animal room and delete the mating task. Place a new request afterwards.

- 7. Check data
- 8. Set due date
- 9. Save

Position	Animal code	Project	styp	Generation	Age	Status
Haus 111 Raum 13:49:9C 09046	1170_20_0030_F_R					

Additional information: The animal status *waiting period* and countdown of days remaining. The information on the *waiting period* for females after the end of mating / unmating is supplemented with the number of days remaining. Example: J87K6 (young animals expected for 87 days, 6 days in waiting period). In the example, the female status of *waiting period* remains for 6 more days.

9

3.3 Mating task



Unit Haus 111 Zucht

Animal code, e.g. 41b 12

Animal code search

Detailed search

Buildings Haus 111 Haus 111 Zucht

Tasks Calculate Cancel

Mating tasks (20)

Samples

Free text tasks

Cages to be emptied

Reduction tasks

Delivery tasks

Resolve conflicts

Wean pups

Pups expected

Husbandry

Mark animals (without sampling)

Find ill animals

Find abnormal animals

Print animal card

Add new animals

Haus 111 Transfer
1 Husbandry systems

Haus 111 Raum 11
20 Husbandry systems

Haus 111 Raum 12
20 Husbandry systems

Haus 111 Raum 13
18 Husbandry systems

Haus 111 Raum 14
20 Husbandry systems

Select *Mating tasks* in the tasks and navigate to the corresponding building/room.

3.3 Mating task



Mating tasks Room Haus 111 Raum 13

Animal code, e.g. 41b 12

Animal code search

Free text tasks **Mating tasks**

ID	Due date	Org unit	Project	Task owner	Animals	Comment	Position
671	06/02/2020				2		51

Click *Mating task*.
Find animals in the indicated locations, search for an empty cage and mate animals.

ID	Due on	Org unit	Project	Task owner	An
671	06/02/2020				2

✓ All ⓧ None ✕ Register departure **👤 Mate animals** 🐾 Mark animals Experiment options Additional options

Position	Animal code	Project
Haus 111 Raum 13:51:4C (09130)	2056_20_0085_F_LRR	
Haus 111 Raum 13:51:5B (09133)	2056_20_0069_M_X	

🔗 mated



3.3 Mating task: documentation for mating



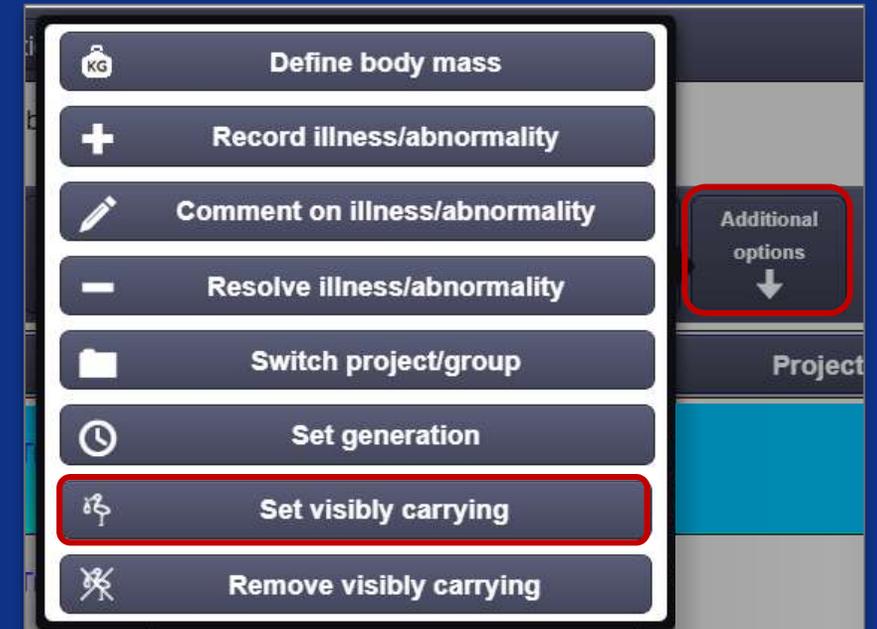
a) In order to be able to identify visibly pregnant females, the following functionality has been added:

➤ For females, the status *visibly carrying* can now be set. Select an animal from each animal room animal list, then the button *Additional options*, then select *set visibly carrying*.

➤ The animal receives the status symbol *visibly carrying*. 

➤ As an example, the animal has 3 status:    it is mated, young animals have been expected for 6 days and it is visibly carrying.

➤ Several animals can have the animal status *visibly carrying*.





3.3 Mating task: documentation for mating



b) In addition, a specific history entry is created:

Details 2064_20_0428_F_10

Details History Matings Records Severities Illnesses/Abnormalities Genotype Body mass

08/10/2021 - 08:50:57 Diego Orlando Pastene Set visibly carrying by Diego Orlando Pastene

- Animal status "visibly carrying" can be confirmed: If the user wants to confirm the status "visibly carrying", the status can be set again. LAVAN creates another history entry. The status "visibly bearing" remains unchanged.
- The animal status "visibly carrying" is automatically removed when young animals are detected.

Details 2064_20_0428_F_10

Details History Matings Records Severities Illnesses/Abnormalities Genotype Body mass

08/10/2021 - 09:16:34 Diego Orlando Pastene Removed visibly carrying status automatically due to litter

- This can be removed manually at any time for females with the status "visibly carrying". One or more animals can be selected at the same time.

Details 2064_20_0428_F_10

Details History Matings Records Severities Illnesses/Abnormalities Genotype Body mass

08/10/2021 - 09:24:18 Diego Orlando Pastene Maldonado Removed visibly carrying status manually by Diego Orlando Pastene Maldonado

08/10/2021 - 09:24:11 Diego Orlando Pastene Maldonado Set visibly carrying by Diego Orlando Pastene Maldonado

3.4 Wean pups



Buildings	Haus 111	Haus 111 Zucht	Haus 111 Raum 13	Tasks	Calculate
Position 41	Greenline (7x10)			Mating tasks	
Position 42	Greenline (7x10)			Samples	
Position 43	Greenline (6x10)			Free text tasks	
Position 44	Greenline (6x10)			Cages to be emptied	
Position 45	Greenline (6x10)			Reduction tasks	
Position 46	Greenline (6x10)			Delivery tasks	
Position 47	Greenline (6x10)			Resolve conflicts	
Position 48	Greenline (6x10)			Wean pups (11)	
Position 49	Greenline (6x10)			Pups expected	
Position 50	Greenline (6x10)			Husbandry	
Position 51	Greenline (6x7)			Mark animals (without sampling)	
				Find ill animals	
				Find abnormal animals	
				Print animal card	

1. Select the task *Wean pups*, select a position with a yellow background.
2. Then click on a yellow marked cage.

Position 51				
	A	B	C	D
1	09116 empty	09117 empty	09118 0 / 4 / 0 236Bf	09119 empty
2	09120 2 / 0 / 0 236Bf	09121 0 / 1 / 10 227Bf	09122 0 / 4 / 0 236Bf	09123 0 / 5 / 0 227Bf
3	09124 0 / 4 / 0 236Bf	09125 0 / 1 / 8 227Bf	09126 empty	09127 0 / 1 / 3 227Bf
4	09128 0 / 5 / 0 227Bf	09129 5 / 0 / 0 227Bf	09130 0 / 7 / 0 227Bf	09131 0 / 3 / 0 227Bf
5	09132 3 / 0 / 0 227Bf	09133 3 / 0 / 0 227Bf	09134 0 / 3 / 8 227Bf	09135 0 / 4 / 0 227Bf
6	09136 0 / 1 / 9 201Bf	09137 0 / 1 / 8 201Bf	09138 0 / 1 / 6 201Bf	09139 0 / 1 / 4 201Bf
7	09140 0 / 1 / 0 201Bf	09141 empty	09142 empty	09143 empty

3.4 Wean pups



Wean pups, 09136

Litter with 9 pups. All pups are preselected. If pups are highlighted in blue they have a reduction task. Wean litter (39 days) now?

1170_20_0063_U_	✓
1170_20_0064_U_	✓
1170_20_0065_U_	✓
1170_20_0066_U_	✓
1170_20_0067_U_	✓
1170_20_0068_U_	✓
1170_20_0069_U_	✓
1170_20_0070_U_	✓
1170_20_0071_U_	✓

✓ Yes, wean ✗ Skip litter

3. Select the animals you want to wean (✓) and confirm with the green button.

4. Enter the target position and number of males and females and confirm with the green button.

You have selected 9 of 9 pups to wean from

target position males	9141
Number of males	3
target position females	9142
Number of females	6

▶ Next

5. After confirming you can also mark the animals (see 1.7 Recording new animals).

3.4 Wean pups



Caution! Pups must ALWAYS be separated from their mother by the task *wean pups*!

Only this way they will be displayed on the cage with the correct gender! Otherwise they continue to run in the system with the gender "Unknown" which can also be recognized in the animal code!

3.5 Reduction task

The screenshot shows a software interface for animal management. At the top, there are tabs for 'Projects', 'Mating', 'Samples', 'Project licences', and 'Animal search'. Below the tabs is a search bar with a 'New project' button and filters for 'Remove all filters' and 'Hide details'. A table shows search results for 'Maus' with 112 animals. A red arrow points to the '112' count. Below the table is a 'New reduction task (1 animal)' form. The 'Causes of departure' dropdown is set to 'EU = euthanasia'. A yellow box contains a caution: 'Caution! Select "Reduktion" only if the line is to be reduced in size. "Zuchtuntauglich" should be used if the animals are too old to breed and "Genotyp" if the animals show the wrong genotype.' To the right, a search window shows a list of animals with a red arrow pointing to the 'Create reduction task' option in the 'Tasks' menu. A text box at the bottom right explains: 'First select the animal(s) to be killed (turquoise) then click on Tasks and select Create reduction task.' A text box at the bottom left explains: 'Set due date: if you select the current date, the reduction order will be displayed immediately in the animal room interface. Select the reason for departure and save it. If the animal care takers should process the reduction order, please enter "Please animal care taker!" in the free text field.'

Select live or dead animals from the corresponding project.

EU = euthanasia

Caution! Select "Reduktion" only if the line is to be reduced in size. "Zuchtuntauglich" should be used if the animals are too old to breed and "Genotyp" if the animals show the wrong genotype.

Set due date: if you select the current date, the reduction order will be displayed immediately in the animal room interface. Select the reason for departure and save it. If the animal care takers should process the reduction order, please enter "Please animal care taker!" in the free text field.

First select the animal(s) to be killed (turquoise) then click on *Tasks* and select *Create reduction task*.

3.5 Reduction task



Buildings	Haus 111	Haus 111 Zucht	Haus 111 Raum 13	Tasks	Calculate
Position 41	Greenline (7x10)			Mating tasks	
Position 42	Greenline (7x10)			Samples	
Position 43	Greenline (6x10)			Free text tasks	
Position 44	Greenline (6x10)			Cages to be emptied	
Position 45	Greenline (6x10)			Reduction tasks (72)	
				Delivery tasks	

Select *Reduction tasks* in the tasks and navigate to the corresponding building/room.



Position 52		
	A	B
1	09144 0 / 6 / 0 544Bf	09145 0 / 1 / 9 267Bf
2	09148 4 / 0 / 0 544Bf	09149 empty
3	09152 empty	09153 empty
4	09156 0 / 3 / 0 232Bf	09157 0 / 3 / 0 232Bf



Register departure	
Husbandry system:	52
Position:	4A
Position number*	9156

Type in the cage number and confirm with *Next*.

Click on one of the yellow positions. Remember the cage number!

3.5 Reduction task



Please select the animals for which you would like to perform the reduction task. Animals with due reduction task are

3012_19_0059_F_118 II	✓
3012_19_0060_F_119 rr	✓

reduction tasks:

Animal code	By	Cause of death	Due date
3012_19_1		EU_Zuchtuntauglich (EU)	06/15/2020
3012_19_rr		EU_Zuchtuntauglich (EU)	06/15/2020

The list shows all animals in the cage:

Position	Animal code	Project	Strain/Breed
Haus 111 Raum 13:52:4A (09156)	3012_19_0058_F_116 I		

Check data and Perform reduction task.

✓ Perform reduction task



Register departure

3012_19_0059_F_118 II:	EU_Zuchtuntauglich (EU)
3012_19_0060_F_119 rr:	EU_Zuchtuntauglich (EU)

Please confirm departure for animals.

Register departure.

✓ Register departure

Caution! In case of animals which were "in experiment" always define severity afterwards! (see next slides) ...



3.5 Reduction task: exit process



- Optimization of the exit process: conversion to clickable animal list

The exit task process was optimized.

The selection/deselection of animals in the process is now done via the clickable animal list known from other processes.

Animal details can be displayed as always by clicking on the animal code.

Register departure							Cancel
Do you want to add or deselect animals?							
The list shows all animals in the cage:							
Position	Animal code	Project	Strain/Breed	Genotype/Generat...	Age	Status	
Haus 21 Raum 17:50:1A (03813)	2084_20_0428_F_10				246 (35) (0y/8m/3d)		

3.6 Free text task



Proje...	Title	Purpose	Org unit	Project lead	1st contact person	Species	Alive.↓	Done	Archd
232						Maus	112		
225						Maus	105		
227						Maus	100		

Select alive animals from the corresponding project.

New free text task (1 animal)

Due on:* 07/13/2020

Please describe the task.

**Set the due date and then enter a free text.
In consultation with the work group a specific scheme can be defined.**

This field is required

Save Cancel

Search 112 Animals 5:32:18 pm

Search parameter

Project: 232

Actions | Tasks | Manage status

Position

- Haus 111 Raum 13: 09077
- Haus 111 Raum 13: 09078
- Haus 111 Raum 13: 09078

Create sample task
Delete sample task
Create free text task
Create delivery task
Delete delivery task
Create reduction task
Delete reduction task

First select the animal(s). Then click on *Tasks* and select *Create free text task*.

3.6 Free text task



Tasks ☰ Calculate

- Mating tasks
- Samples
- Free text tasks**
- Cages to be emptied
- Reduction tasks
- Delivery tasks
- Resolve conflicts
- Wean pups
- Pups expected

Free text tasks Mating tasks

ID	Due date	Org unit	Project	Task owner	Animals	Task	Position
827	08/31/2020					breeding	49

Task 175 for Room Haus 111 Raum 13 Animal code, e.g. 41b 1; Animal code search Detailed search ⏻

ID	Due on	Org unit	Project	Task owner	Animals
175	02/14/2020				

mate trio

✓ All ⊘ None ✗ Register departure 🏠 Move animals 👤 Mark animals ⚙ Experiment options ⚙ Additional options 🖥 Desktop

Position	Animal code	Project	Strain/Breed	Genotype/G...	Age	Status
Haus 111 Raum 13:48:1E (08940)	2056_19_0061_M_X					👤
Haus 111 Raum 13:48:5E (08964)	2056_19_0034_F_34 LR					👤
Haus 111 Raum 13:48:6A (08966)	2056_19_0033_F_33 I					👤

The task can finally be marked as *Done* or *Delete*.

3.7 Sample task

Projects Mating Samples Project licences Animal search

New project Remove all filters Hide details Count: 54

Proje...	Title	Purpose	Org unit	Project lead	1st contact person	Species	Alive.↓	Dep
232						Maus	112	37
225						Maus	105	82
227						Maus	100	59

Select live or dead animals from the corresponding project.

New sample task (1 animal)

Due on:* 06/27/2020

Sample type:* Please select...

- Blut (EDTA)
- Blut (Heparin)
- Blut (Serum)
- Knochenmark
- Kotprobe
- Ohrlochmarkierung als Probe
- Organproben für Histologie
- Probe Niere aus Nephrektomie
- Schwanzbiopsie
- Urinprobe

Search 112 Animals 5:02:02 pm

Search parameter

Project: 232:

Actions | Tasks | Manage status

Position

- Haus 111 Raum 13:09108
- Haus 111 Raum 13:09108
- Haus 111 Raum 13:09108

Departure in

Create sample task

- Delete sample task
- Create free text task
- Create delivery task
- Delete delivery task
- Create reduction task
- Delete reduction task

Caution! If you have selected Sampling at weaning when creating the project the animals will automatically receive a sampling symbol. You can also specify the sampling before or after weaning. Remember to resolve your sampling work in LAVAN (see slide 70).

First select the animal(s) then click on *Tasks* and select *Create sample task*.

3.7 Sample task

Projects Mating **Samples** Project licences Animal search 30:00 min Animal room (touch) Logout

Search sample carriers

Carrier number: Please enter...
Strain: Enter search term...
Project: Enter search term...
Org. unit: Enter search term...
Sample type: Please select...
Creation date (month): < 6

Select all Deselect all Remove all filters Export as Excel worksheet Count: 4

Search parameters:
Creation date: < 6 month

Carrier nu...	Creation date	Project	Sample type	Sample co...
120	01/10/2020	234	Ohrlochmarkierung als Probe	1
119	01/10/2020	234	Ohrlochmarkierung als Probe	2

In *Samples* you can search and manage all sample carriers. Files (gel images, Excel file) can also be uploaded to provide the information for genotyping.

Projects on this carrier

ID ↑	Project
234	



Attachments
Select file... Please enter... Upload
Name ↑

Search: Sample carrier 5:59:55 pm Carrier: 118

Hide projects: All None Enter genotype for selection Export as Excel worksheet

1...	1	2	3	4	5	6
A	3011_19_0086_M_L	3011_19_0087_M_Pb	3011_19_0088_M_L			
B						
C						
D						
E						
F						
G						
H						

Depending on their status, the following symbols can be seen behind the animals.

-  Sample task(s)
-  Sample task(s)
-  Sample(s) taken



3.7 Sample task



➤ Optimization of sampling

Overview before starting the sampling process that simplifies preparatory work.
An overview page is now available before starting a sampling process.
The following information is displayed:

Take samples	
Due date:	07/28/2021
Project:	
Org. unit:	
Owner:	automatically
Sample type:	Ohrlochmarkierung als Probe
Positions:	55
Animals to process / Animals in cages (Number of cages):	4/7 (2)

08/07/2021	AG	441	automatic	7	50	Ohrlochmarkieru...
08/08/2021	AG	441	automatic	8	50	Ohrlochmarkieru...
08/16/2021	AG	441	automatic	10	50	Ohrlochmarkieru...
08/18/2021	AG	441	automatic	7	50	Ohrlochmarkieru...
09/05/2021	AG	441	automatic	5	50	Ohrlochmarkieru...

Followed by a complete animal list (with location) of all animals for sampling. Now several cages can be prepared before starting the task.

For the first time, not yet due sampling orders (lighter grey) are displayed below sampling orders on schedule (black). This function allows a better planning and preparation of sampling in the animal room (e.g. which samples have to be taken the next working day?). Samples can be taken before the scheduled day as well.



3.7 Sample task: sample carrier



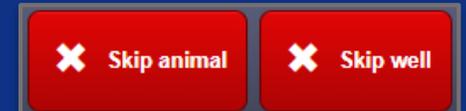
➤ Allocation of sample carriers (e.g. plate number of a 96-well plate)

Sample placement is possible vertically or horizontally in the sample carrier. The function *skip well* on the sample carrier is intended for positions of a sample carrier that cannot be filled, for example due to soiling of a well in the 96-well plate.

Example of a vertically filled
Sample carrier:

Search: Sample carrier 10:25:23 am × Carrier: 1668 ×						
Hide details All None Enter genotype for selection Export as Excel worksheet TransnetYX QuickOrder						
1668	1	2	3	4	5	6
A	M_58_21_0058_					
B	M_59_21_0059_					
C	M_60_21_0060_					
D						
E						
F						
G						
H						

Skipping a well or an animal on a
sample carrier:





3.7 Sample task: Alias



➤ **Assignment of an alias for sample carriers** (e.g. plate number of a 96-well plate).

A sample carrier can now be given another name (an *alias*).

The entry is made at the beginning of the sample tasks.

An alias can also be entered or corrected in the sample carrier view (desktop).

This is part of the optimization of the sampling process for genotyping with TransnetYX.

Example: Using a new sample carrier with alias “65”.

Carrier details	
Carrier number:	1668
Load sequence:	top to bottom
Sample count:	3
Alias:	<input type="text" value="65"/>
Change alias	

Desktop: sample holder view.
Alias is editable.

Continue taking samples on an existing carrier?	
Sample carrier number	<input type="text"/>
Load sequence	left to right
Alias	<input type="text" value="65"/>

Example of a sample carrier
with alias “65”



3.7 Sample task: Alias

- You can search directly for an alias (or parts of it).
- You can use a unique barcode number. Find sample carriers.
- The Excel export of sample carrier data has been extended to include the alias. The exported Excel work sheet from the sample carrier is now referred to as "sheet 1"

Projects Mating Samples Project licences Animal search

Search sample carriers

Carrier number:

Alias:

Strain:

Project:

Org. unit:

Sample type:

Creation date (month):

Search

Reset form

Search: Sample carrier 2:49:2

Select all Deselect all

Search parameters:

Creation date: < 6 month

Carrier nu...	Alias
1642	-
1641	-
1640	T1184183
1639	-
1638	-

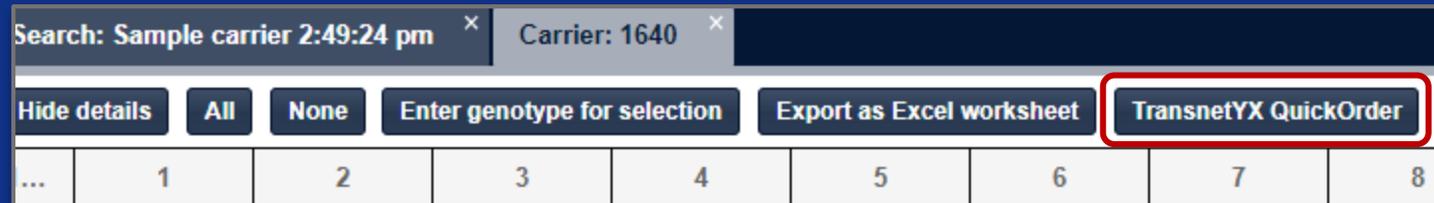
Remove all filters

Export as Excel worksheet



3.7 Sample task: Alias

- In order to further simplify the genotyping order from the provider TransnetYX, LAVAN now offers the possibility to export the data from sample carriers in a format optimized for TransnetYX.



- Sample carriers are to be filled vertically for TransnetYX . The unique plate code should be entered as an alias.

3.8 Genotype



Option 1

Starting from the sample carrier you can select samples with the same genotype.

Search: Sample carrier 5:59:55 pm x Carrier: 118 x

Hide projects All None **Enter genotype for selection** Export as Excel worksheet Search selected animals

1...	1	2	3	4	5	6	7	8	9	10	11	12
A	3011_19_0086_M_L I	3011_19_0087_M_Rr	3011_19_0088_M_L r									
B												
C												
D												
E												
F												
G												
H												

Enter genotype

Mother: 3011_19_0083_F_65 llr Father: 3011_19_0019_M_64 ll

Animal codes	Gene / Locus	1st Allele	2nd Allele
3011_19_0086_M_LI	Rag2ko	Do not change	Do not change
3011_19_0087_M_Rr	Ahr flox	ko	Do not change
	Ncr1-cre	no entry	Do not change
		wt	

Now you can enter the genotype for different samples simultaneously.

Save Cancel



3.8 Genotype



Option 2

Projects | Mating | Samples | Project licences | Animal search

Search 93 Animals 6:18:16 pm

Search parameter
Project: 234

Actions | Tasks | Manage status

Enter genotype

Change project/group

Export as Excel worksheet

Rescind animals

Position	Animal codes	Departure infor...	From
Haus 0887	3011_20_0069_M_L	-	1784
Haus 111 Raum 13:47 08876	3011_20_0070_M_R	-	1784
Haus 111 Raum 13:47 08876	3011_20_0071_M_LL	-	1784
Haus 111 Raum 13:53 09192	3011_20_0072_F_L	-	1784

After clicking on the alive animals of a project and selecting the corresponding animals for genotyping, one can choose *Action > Enter genotype*.

Enter genotype

Mother: 3011_19_0017_F_101 RRR Father: 3011_19_0087_M_Rr

Animal codes	Gene / Locus	1st Allele	2nd Allele
3011_20_0069_M_L	Rag2ko	Do not change	Do not change
3011_20_0070_M_R	Ahr flox	Do not change	Do not change
3011_20_0071_M_LL	Ncr1-cre	flox	Do not change

no entry

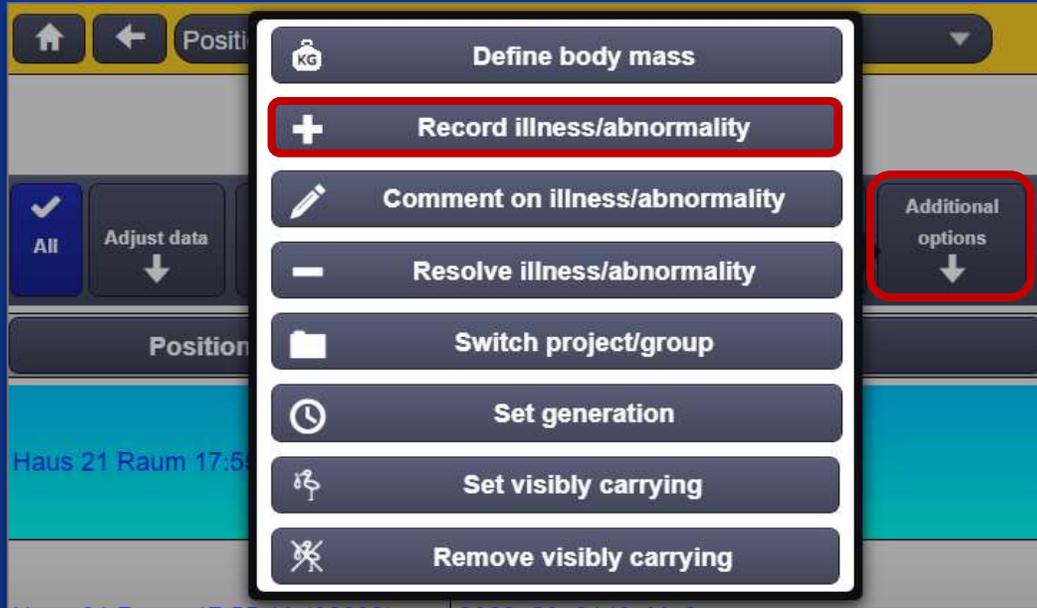
wt

Save Cancel

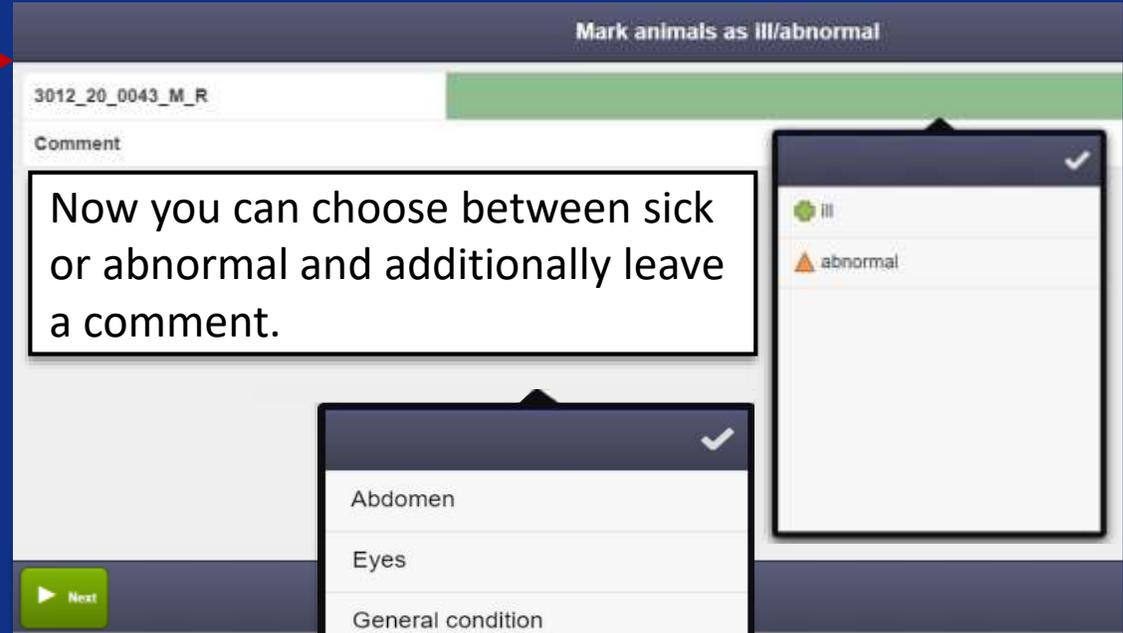
The genotype of all genes/alleles for different samples can be added simultaneously.



3.9 Illness/abnormality



Select the abnormal or sick animal directly and click on *Additional options* and select *Record illness/abnormality*.



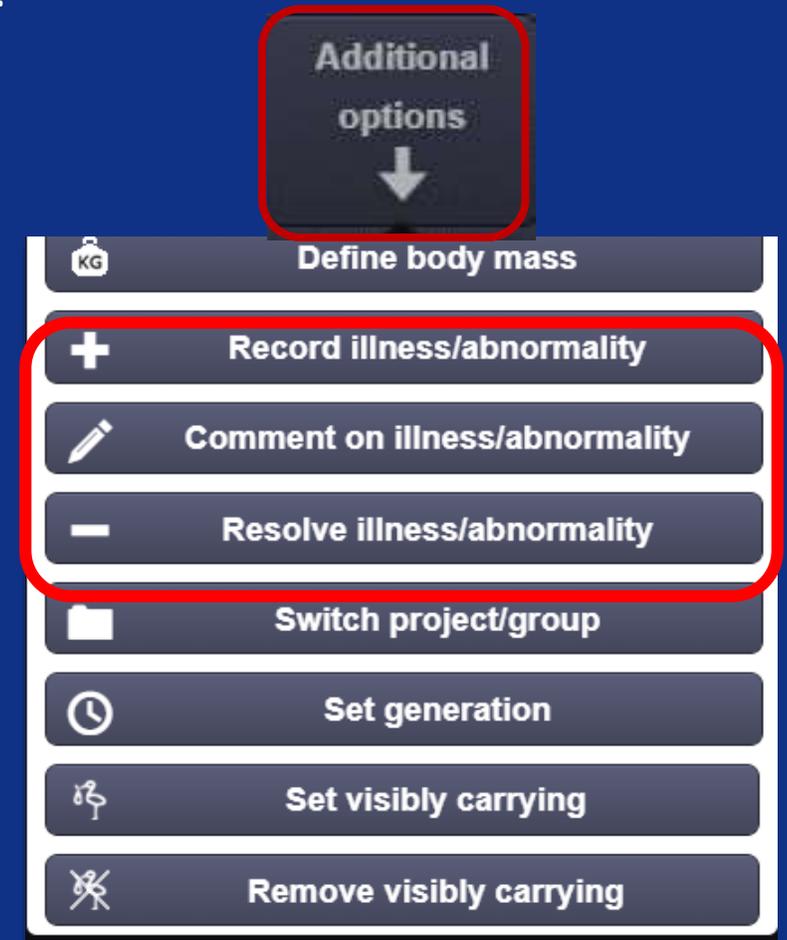
The recording of diseases and abnormalities can be started for several selected animals (from the animal room animal list under *additional options*). When several animals are selected, the guidance is done in a process from animal to animal. The input remains single animal based. Diseases and abnormalities are assigned to categories.



3.9 Changes in the recording of illness/abnormality



- All diseases / abnormalities are now always assigned to a category.
- At the time of this update, existing diseases /conditions are automatically assigned to the category “Other”
- As before, diseases / conditions can be entered in 2 ways:
 - a) Select an animal from each room or list, then select *Additional options > Record illness / abnormality.*





3.9 Changes in the recording of Illness/abnormality



- b) Over the detailed animal care process after the question "All animals healthy"?
With answer: "no" enter the process *record illness /abnormality*.
- Each diseases /conspicuousness now has a category and a start date.
 - The Capturing, commenting, and resolving done for a specific process.
 - The display is clearly presented for each disease /conspicuousness in the same category.
 - Each animal can only have one activity from a category at the same time.
 - Commenting and resolving diseases / conspicuousness works similar to the capturing.
 - For each action a history entry in the animal history is also created.
 - The information about category, start/end date is also included in the Excel export of animal information (from desktop animal lists). The Excel export contains all information about the animal, from the animal code to the abnormality or body mass.

The screenshot shows a software interface for animal care. At the top, there is a yellow header bar with a home icon, a back arrow, and a dropdown menu containing the text "Details 2064_20_0428_F_10". Below this is a dark grey navigation bar with several tabs: "Details", "History", "Matings", "Records", "Severities", "Illnesses/Abnormalities" (which is highlighted), "Genotype", and "Body mass". Under the "Illnesses/Abnormalities" tab, there is a green bar with a plus icon and the text "Abdomen (08/10/2021 to -)". Below that, a white bar contains the text "08/10/2021 - 10:50:58 Diego Orlando Pastene Maldonado: Superficial wound in belly".

3.10 Set "in experiment"



The screenshot shows a mobile application interface. At the top, there is a menu with three options: 'Add animal record', 'Set "in experiment"', and 'Define severity'. The 'Set "in experiment"' option is highlighted with a red border. Below the menu, there are several buttons: 'All', 'none', 'register departure', 'move animals', 'mark animals', 'Experiment options', and 'Additional options'. The 'Experiment options' button is also highlighted with a red border. Below the buttons, there is a table with three columns: 'Position', 'Animal code', and 'Project'. The first row of data shows 'Haus 111 Raum 13:50:4D (09077)', '3012_20_0043_M_R', and an empty 'Project' cell.

Caution! The *set in experiment* option only exist in experimental projects or breeding with experimental license. In order to use animal from exclusively breeding projects, they must be allocated into experimental projects first (see 3.2)! Then one can select the desired animals, click on *Experiment options*, and the option *Set "in experiment"* becomes available.

Position	Animal code	Age	Status
Haus 111 Raum 13:50:4D (09077)	3012_20_0043_M_R	91 (13) (0y:2m:30d)	

The animals then automatically receive the mark in their status: In experiment

3.10 Set “in experiment”



Animal Details Animal History Animal Matings **Records** Severities Illnesses/Abnormalities Genotype

Animal Details 1000_20_0067_M_

Species: Maus
Strain: 1000: C57BL/6NRj
Gender: male
Tag:
Age: 186 days (26 weeks) (0y:6m:3d)
Date of Birth: 12/24/2019
Comment: Ankunft 11.2.20
Genotype:

Project data

Project:
Group:
Organisation unit:
Contact persons:

Ancestry

Origin: Janvier (O1)
Generation:
Cross breed number:
Mother:
Father:

Status

Position: Haus 21 > Haus 21 Experimentalbereich > Haus 21 Raum 54 > 93 > 7B (06637)
Position number: 06637
Animal was abnormal

To record what treatment an animal received during an experiment one can add *Records*.

Animal Details Animal History Animal Matings **Records** Severities Illnesses/Abnormalities Genotype

Add record

3.11 Define severity



Select the desired animals, click on *Experiment options* and choose *Define severity*.

The screenshot shows the mobile application interface. At the top, there is a navigation bar with a home icon, a back arrow, and a dropdown menu showing 'Position 93, 7B (06637) - Typ 2L'. Below this, there is a section labeled '223E:'. A row of buttons includes 'All', 'None', 'Register departure', 'Move animals', 'Mark animals', 'Experiment options' (highlighted with a red box), and 'Additional options'. Below the buttons, there is a table with columns 'Position' and 'Animal code'. The first row shows 'Haus 21 Raum 54:93:7B (06637)' and '1000_20_0067_M_'. A context menu is open over the table, with 'Define severity' highlighted in red. The menu also contains 'Add animal record' and 'Set "in experiment"'. At the bottom of the screen, there is a text entry field with the text '(6/N) Untersuchung grundlegende Funktionen des Immunsystems'.

Caution! As soon as an animal is "in experiment" the severity can be recorded. The exposure MUST be recorded after the animal has departed!

The screenshot shows the 'Define severity' screen. At the top, there is a text entry field with the text '1000_20_0067_M_'. Below this, there is a section labeled 'Selected animals'. A table with columns 'Position' and 'Animal code' is shown. The first row shows 'Haus 21 Raum 54:93:7B (06637)' and '1000_20_0067_M_'. A dropdown menu is open over the table, showing severity options: '0 (keine/no)', 'SV1 (Keine Wiederherstellung d...', 'SV2 (Gering/Mild)', and 'SV3 (Mittel/Moderate)'. The 'SV2 (Gering/Mild)' option is selected, indicated by a checkmark. At the bottom of the screen, there is a green button labeled 'Define severity'.

The severity is entered according to the severity of the treatment based on the corresponding project licence. Of course, in individual cases there might also be a different (higher or lower) severity.

3.11 Define severity



Projects Mating Samples Project licences **Animal search** 30:00 min Animal room (touch) Logout

New project licence Remove all filters Hide details Count: 5

Pr...	Title	De...	Int...	Or...	A...	A...	A...	A...	S...	St...	End	In...	D...	A...
-------	-------	-------	--------	-------	------	------	------	------	------	-------	-----	-------	------	------

Caution!
If the severity was recorded incorrectly, it can be corrected subsequently by the scientist within 28 d! To do this, click on the animals without or with incorrect exposure assessment, mark them and click on the animal room surface under "*Experiment options*" > "*Record exposure*". There you can evaluate the animals accordingly.

If you click on the licence you will get all information on the right side. Also the animals that do not have a severity documentation are shown. By clicking on the number you can move to the animals and define severity afterwards.

Project licence

Staff

Applicant:

Planner:

Animal approved/ booked: 950/ 41

Approved animal count:	950
Booked animal count:	41
of which departed:	40
-without severity:	0
-with severity without legal framework:	0
of which alive in experiment:	1

Attachments

Name ↑
No matching records

3.11 Define severity

Severities	
Abbreviation ↑	Description
0	keine/no
SV1	Keine Wiederherstellung der Lebensfunktion/Non-Recovery
SV2	Gering/Mild
SV3	Mittel/Moderate
SV4	Schwer/Severe

Caution!

If an animal is found dead in the cage by the animal keepers or was killed for certain reasons the severity **MUST** be recorded subsequently by the responsible **scientists!**

By law all experimental animals require a severity definition of their treatment.

The degree of severity can be between SV1 - SV4 for §7 animals.

Attention: SV1 is only permitted for §7 animals if they have not been manipulated beforehand.

The §4 animals can only receive SV1.

SV0 is not permitted for laboratory animals as defined by the legislator and leads to error messages in LAVAN.

Example:

If organs are removed and the animal is killed beforehand, the animal always receives the exposure rating **SV1** on departure.

3.12 Resolve conflicts



Buildings Haus 111 Haus 111 Zucht Haus 111 Raum 13 Tasks Calculate Cancel

Position 41 Greenline (7x10)
Position 42 Greenline (7x10)
Position 43 Greenline (6x10)
Position 44 Greenline (6x10)
Position 45 Greenline (6x10)
Position 46 Greenline (6x10)
Position 47 Greenline (6x10)
Position 48

Mating tasks
Samples
Free text tasks
Cages to be emptied
Reduction tasks
Delivery tasks
Resolve conflicts (1)
Wean pups
Pups expected

Position	Animal code	Project	Strain/Breed	Genotype/O...	Age	Status
Haus 111 Raum 13:42:2C (08575)	1176_20_0014_F_L	265: I-19/21 Zucht (PDL-1 flox) Untersuchung grundl			87 (12) (0y 2m 26d)	✖ [i]
Haus 111 Raum 13:42:2C (08575)	1176_20_0015_F_R				87 (12) (0y 2m 26d)	✖ [i]
Haus 111 Raum 13:42:2C (08575)	1176_20_0016_F_LL				87 (12) (0y 2m 26d)	✖ [i]

1 conflict
06/09/2020 - 12:18:30: Die Anzahl der adulten Tiere in der Datenbank stimmt nicht mit den vor Ort festgestellten Werten (männlich: 0, weiblich: 2) überein.

Delete conflicts

Caution!

After solving a conflict you have to delete it immediately in LAVAN!
Otherwise the conflict remains active for this cage, although the error has been fixed.

To minimize further errors, a warning is displayed when moving animals into a position with conflict. After clicking on *“Continue anyway”* moving is still possible.

3.13 Archive projects



	195	Experiment
	197	Experiment
	198	Experiment
	200	Experiment
	201	genehmigungsfre
	202	Experiment



Edit project

Project

Project-ID: 195

Archived:

Title:*

Purpose:*

Project licence:

Org unit:*

Species:*

Days until weaning:

Strains in project: Enter search term...

After selecting the project with the pen, you can tick the box *Archived*. This means that the project will no longer appear at the start page. You can also find it again among the archived projects and reactivate it by unticking *Archived*!

3.14 Delivery task

- Animals can be requested and moved **internally** and **externally** to the facility.
- The **internal transfer** includes the process of moving animals.
- The **external transfer** includes the deregistration of the animals from LAVAN, i.e. their departure without killing the animals. They are usually transferred to another facility/house.
- When creating an **internal transfer** order, please note the following: after selecting the animal and order, enter the type of movement ("internal") with the desired date and destination (short specification as free text, e.g. 'in house 21; room 16'). At the end, the process is confirmed by LAVAN as usual and the animals are listed in the new position. An entry is made in the animal history.
- Please note the following when creating an **external transfer** order:
select the animals to be moved in the animal list, select the category "external" in the order and enter the destination. After entering the correct item number, the process of departure recording from LAVAN begins. By clicking on "record departure" the item number is requested and the reasons for departure can be entered. After entering the departure date and the departure reason the animals can be moved externally. Appropriate reasons for departure have been set up by administrators, e.g. "Transport to other facility". At the end of the process, the animals are finally listed (marked in red) as having left and the transfer order has been processed. All details are documented in the animal history.

3.14 Delivery task

Proj...	Title	Purpose	Org unit	Project lead	1st contact person	Species	Alive.↓	Dena	Archi
232						Maus	112		
225						Maus	105		
227						Maus	100		

Select live animals from the corresponding project.

Due date: 06/27/2020
Category: external
Please enter: internal

Set the due date and then enter a free text.
In consultation with the work group, a specific scheme can be defined.
In status, these animal show the following symbol

Search 112 Animals 5:32:18 pm

Project: 232

Actions | Tasks | Manage status

- Create sample task
- Delete sample task
- Create free text task
- Create delivery task**
- Delete delivery task
- Create reduction task
- Delete reduction task

First select the animal(s) to be transported then click on *Tasks* and select *Create delivery task*.

3.14 Delivery task



Tasks Calculate

- Mating tasks
- Samples
- Free text tasks
- Cages to be emptied
- Reduction tasks
- Delivery tasks**
- Resolve conflicts
- Wean pups
- Pups expected

Delivery tasks room: Haus 111 Raum 13 (AG Cerwenka)

Due date	Org. unit	Project	Task owner	Task	Animal
07/13/20			er, Julia	0 (2)	0 (2)

Delivery task

Due date:
Org. Unit:
Project:
Task owner:
Task:
Category:

Pending animals of the task / Animals in cages (Number of cages):

Please select the animals for which you want to process the

Position	Animal code	Project
Haus 111 Raum 13:47:5F (08905)	3011_19_0016_F_1001	

Room number: Haus 111 Raum 13
Position number: 47
Coordinate: 5F
Task: Move to Tridomus...

Please take the cage from the specified coordinate and enter the position number. Leading zeros can be used.

Position number

Next Skip

M: In mating P: Pups expected since x days W: In waiting period X: In conflict Was ill Auturritide Fys auturritide
task Sample Task(s) Due sample task(s) Sample(s) taken In experiment Reduction task Reduction task due

Select an individual task and then you will be directly forwarded to the animals

In case of internal transport (between different buildings) you can choose the new position in LAVAN

3.14 Delivery task



Task 175 for Room Haus 111 Raum 13

Animal code, e.g. 41b 12

Animal code search

Detailed search

ID	Due on	Org unit	Project	Task owner	Animals
175	02/14/2020				3

mate trio

Done Delete

All None Register departure Move animals Mark animals Experiment options Additional options Desktop

Position	Animal code	Project	Strain/Breed	Genotype/G...	Age	Status
Haus 111 Raum 13:48:1E (08940)	2056_19_0061_M_X				202 (28) (0y:6m:19d)	
Haus 111 Raum 13:48:5E (08964)	2056_19_0034_F_34 LR				223 (31) (0y:7m:10d)	
Haus 111 Raum 13:48:6A (08966)	2056_19_0033_F_33 I				223 (31) (0y:7m:10d)	

The order can finally be marked as *Done* or *Delete*.

3.15 Body mass tracking (weight tracking)

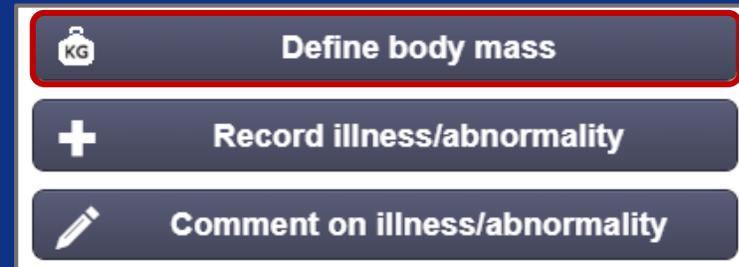


Body mass input

The *Define Body Mass* function has been added to the *Additional Options* menu of the animal room list. The next step is to enter the body mass. Comma and dot are allowed. The unit is preselected depending on the animal type. The output takes place in the *animal detail* area under *Body mass*. An Excel export of the body mass is possible.

Entering body mass data later

It is possible to enter body mass data with the specification of a date. The current date is set as default. By selecting a previous date, past data can be entered (e.g. old data from before the function was introduced).



Define body mass

Please enter the body mass.

Date (mm/dd/yyyy)* 08 / 10 2021

2064_20_0428_F_10 34.5 g

3.15 Body mass tracking (weight tracking)



- By default, existing animal species are given the unit gram (g).
- A graphical representation of the weight progress of the past 30 days can be found in:

Animal Details > Body Mass.

Correct body mass data

To be able to correct entries, it is possible to change existing body mass data. The process *Correct body mass* can be started in the animal details area in the tab *Body mass* at the bottom left corner.



3.16 Recording schemes for all users



- The administrator is now able to provide one or more documents in the recording process for all users.

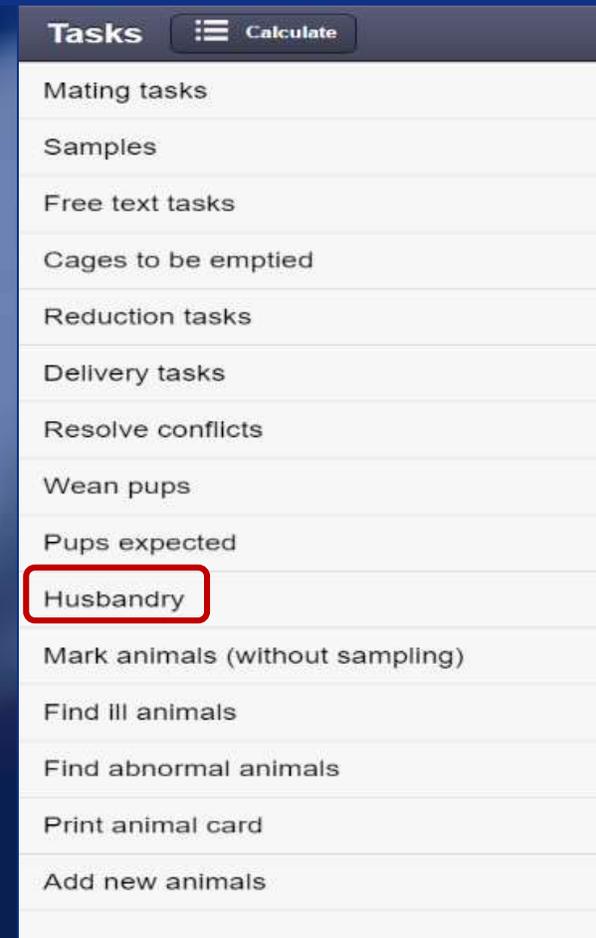
The screenshot shows a web application interface for animal details. At the top, there is a navigation bar with a home icon, a back arrow, and a dropdown menu showing 'Details' and the animal ID '_21_0080_M_84'. To the right of the dropdown are search buttons: 'Animal code search', 'Detailed search', and a power icon. Below the navigation bar is a horizontal menu with tabs: 'Details', 'History', 'Matings', 'Records' (highlighted with a red box), 'Severities', 'Illnesses/Abnormalities', 'Genotype', and 'Body mass'. The main content area is divided into two columns. The left column is titled 'Animal details' and shows the animal ID '_21_0080_M_84' and the following information: Species: Maus, Strain: (blank), Gender: male, and Tag: 84 (1-99 Löcher und Kerben). The right column is titled 'Project' and shows: Project: (blank), Group: (blank), Organisation unit: (blank), and Contact persons: (blank).

- These documents are available for download and thus for all users to view in the animal detail area under records:

The screenshot shows the 'Records' tab selected in the animal details page. The 'Records' tab is highlighted with a red box. Below the tab is a large empty text area for recording. To the right of this area is a button labeled 'Add record'. At the bottom of the page, there is a list of document links for Grimace Scale Posters, which are highlighted with a red box: [NC3Rs Mouse Grimace Scale Poster \(EN\).pdf](#), [NC3Rs Rabbit Grimace Scale Poster \(EN\).pdf](#), and [NC3Rs Rat Grimace Scale Poster \(EN\).pdf](#).

4 Applications for animal care takers

- Access to all animals!
- Immediate documentation of the work on the animal
- No more notes on cages
- Record animals by appointment
 - House 111 Julia Hartenburg
 - House 21/Tridomus Petra Prochazka
- Do everything under the task "animal care"



4.1 Quickcheck



Husbandry, 1A

Cancel

Husbandry system:	42
Coordinate:	1A
Position number:	08566
Males:	2
Females:	0
Pups:	0

After selecting a cage all animals are displayed and then you can continue with *Quickcheck* or *Detailed husbandry*. Also *Skip* and *perform reduction task* are possible.

Quickcheck?

The list shows the animals in the cage.

Position	Animal code	Project	Strain/Breed	Genotype/Generat...	Age	Status
Haus 111 Raum 13:42:1A (08566)	1176_20_0022_M_L				66 (9) (0y:2m:5d)	
Haus 111 Raum 13:42:1A (08566)	1176_20_0023_M_R				66 (9) (0y:2m:5d)	

M:In mating P:Pups expected since x days W:In waiting period X:In conflict Was ill Abnormal Was abnormal Has record(s) Has free text task Has due free text task Has mating task Has due mating task Sample Task(s) Due sample task(s) Sample(s) taken In experiment Reduction task Reduction task due today Reduction task overdue Delivery task Due delivery task

After clicking on *Quickcheck* the animal care for this cage is done.

Quickcheck Detailed husbandry Skip

4.2 Detailed husbandry



Husbandry, 1A

Coordinate: 1A

Please take the cage from the specified coordinate and enter the position number. Leading zeros can be omitted.

Position number* 8566

If you select *Detailed husbandry* you will get a detailed overview after entering the cage number. Here the animals present can be checked as well as dead animals can be recorded. In case of deviations the system automatically creates a conflict which needs then to be solved by the scientist.



Afterwards you will be forwarded to various questions:

- *Correct number of animals*
- *Health status of the animals (dead animals?)*
- *Animal care done*
- *Forwarding to the next cage*

Confirm the number of **live, adult** animals at the position. 0 Pups. Are there any dead animals?

Males* 2

Females* 0

Register dead animals

These animals are at position:

Position	Animal code
Haus 111 Raum 13:42:1A (08566)	1176_20_0022_M_L
Haus 111 Raum 13:42:1A (08566)	1176_20_0023_M_R

M:In mating P:Pups expected since x days W:In waiting period X:In conflict Ill Was ill task Sample Task(s) Due sample task(s) Sample(s) taken In experiment X Reduc

Next

5 Corrections

1. Recorded departure of the wrong animal → Resuscitation (cancellation possible for scientists within 24 h; afterwards contact Administration)
2. Change gender in LAVAN
3. Problems with waiting periods for next mating
4. Transfer of animals between different work groups
5. Unforeseen events during the inspection of the cages
6. Additional cards for the cages

5.1 Resuscitation



Search 52 Animals 10:02:25 pm

▲ Search parameter

Project: Departure: departed

Actions | Tasks | Manage status | Switch to animal room |

Position	Animal code
Haus 111 Raum 13:51	1170_20_0056_U_09138

In the project interface you select the departed animals for the corresponding project and then switch to the animal room.

Adjust animal data

Revert departure

Rescind animals

Additional options ↓

Haus 21 Raum 17:50:1A (03813) EU_Reduktion 08/10/2021	2064_20_0428_F_10
---	-------------------

Select animal, click *Additional Options* and select *Revert departure*.

Then select an empty cage where the animal should be moved to.

Caution! This must be done within 24 h after killing. Afterwards this must be done by an admin.

5.2 Change gender



The screenshot shows a mobile application interface. At the top, there are three action buttons: 'Adjust animal data' (with a pencil icon), 'Revert departure' (with a refresh icon), and 'Rescind animals' (with an 'X' icon). Below these is a table with two columns. The first column contains the text 'Haus 111 Raum 13:42:5C (08596)'. The second column contains the text '2057_20_0041_M_R'. To the right of the table is a vertical menu with 'Additional options' (with a downward arrow icon) and 'Project'.

Select animal, click *Additional options* and select *Adjust animal data*.

The screenshot shows the 'Edit animal data' screen. The title is 'Edit animal data'. The content is as follows:

Editing animal:	1 / 1
Animal code:	2057_20_0041_M_R
Date of birth (mm/dd/yyyy)*	02 / 08
Comment	
Origin*	MedMa (O1)
Strain	2057
<small>You are not permitted to change the strain of this animal</small>	
Gender*	male
Father	1176_19_0045_M_80
<small>You are not permitted to change the father of this animal</small>	

At the bottom right, a dropdown menu is open, showing 'male' with a checkmark and 'female'.

Caution! To change gender of an animal that is in a cage with other animals it must first be moved to an empty cage otherwise you would automatically start a mating.

5.3 Waiting period



Position	Animal code	Project	Strain/Breed	Genotype/G...	Age	Status
Haus 111 Raum 13:50:9C (09106)	1170_20_0003_F_L			Rag2ko: -	170 (24) (0y:5m:18d)	

There are different waiting periods:

1. After the birth of young animals the mother is in waiting period for 8 days. During this time no new mating can be done with a **new** male. With the same male, however, a new mating is possible without waiting periods.
2. If a female does not become pregnant despite mating and therefore does not give birth she is shown 40 days as *Pups expected*.

5.4 Transfer of animals between Org. units



New project

Project

Project-ID: Will be generated on save...

Archived:

Title*: Please enter...

Purpose*: Please select...

Project licence: Enter search term...

Org unit*: Enter search term...

Species*: Enter search term...

Days until weaning: Use value of species

Strains in project: Enter search term...

No strains have been added to this project

Procedure regulations

activate:

Target strain: Enter search term...

Animal marking regulations

Markings are mandatory:

Default marking type: Please select...

Staff

Project lead*: Enter search term...

1st contact person*: Enter search term...

2nd contact person: Enter search term...

3rd contact person: Enter search term...

Project staff: Enter search term...

To move animals between different work groups (Org. units) you first create a new project. Under *Project staff* you enter the responsible persons of the two groups which are necessary to carry out the transfer.

The project of the animals to be transferred is then changed to this joint project.

Comment

Please enter...

Save

Cancel

5.5 Unforeseen events during cage inspection



✓ Distinction between abnormal and sick animals :

- Abnormalities: no veterinary assessment needed e.g. bent tail, bald spot (alopecia) etc.
- Illness: veterinary assessment in case of actual illnesses.

✓ If an animal is missing in the cage :

1. One animal less needs to be entered when detailed husbandry is performed. This will create a conflict in the system that informs that something is wrong.
2. **Conflicts must be resolved immediately !!**
3. When the keepers create the conflict, they can then use the "*Add Recording*" function to note exactly what is wrong (e.g. 1 animal missing in the cage).
4. In addition if the keepers cannot solve the problem on their own, they should immediately contact the person responsible for the respective animals.
5. Warning when moving animals to a position with conflict: to further minimize errors, a warning is displayed when moving animals to a position with conflict. After clicking on "*continue anyway*" moving is still possible.

✓ If an unwanted mating has taken place :

1. A conflict must be created first. For example, in the case of 4 falsely assumed females, one animal is identified as male in the system.
2. Afterwards the male can be moved into another cage.
3. Depending on whether the mating is desired or not one can either perform an actual desired mating in the system or departure the animals.

5.6 Additional cards for cages



There are additional cards for the cages, which can be hung for additional information (after consultation and if required):

1. Cards for breeding food
2. Cards for experimental food
3. Cards for medication in water
4. Hygiene inspection cards

6 LAVAN – TransnetYX

- Genotype results can be outsourced using the QuickOrder service from TransnetYX.
- The material for genotyping can be collected when ear marking or sampling tasks are performed.
- The ordering process can be simplified by exporting a standard template from LAVAN.

Select the sampling task



Due date	Org Unit	Project	Owner	Count	Positions	Sample type
09/10/2021			automatic	8	50	Ohrlochmarkieru...

Select a sampling task such as ear marking and proceed.

Take samples Cancel

Due date: 09/10/2021

Project:

Org. unit:

Owner: automatically

Sample type: Ohrlochmarkierung als Probe

Positions: 50

Animals to process / Animals in cages (Number of cages): 8/10 (2)

Sample task view

Position	Animal code	Project	Age	Status
Haus 21 Raum 17:50:1C (03816)	?_21_1067_M_		36 (5) (0y 1m 5d)	

Caution! If you have selected *Sampling at weaning* when creating the project, a sampling task will be automatically created for the litter. If so, use that sampling task to proceed.

Setting the sample carrier



Take samples

Continue taking samples on an existing carrier?

Sample carrier number

Load sequence top to bottom

Alias T1184199

left to right

top to bottom ✓

Take samples

Husbandry system: 50

Position: 1C

Please pick up the cage at the specified position to take samples.

Position number 3815

Continue Skip position

Caution! The TransnetYX template uses the *top to bottom* option. **Important:** To continue using the same 96-well plate for all your samples tasks, insert the number of sample carrier and continue (the *Alias* will remain).

Each TransnetYX 96-well plate has a barcode and number associated. This number must be assigned as *Alias* of the sample carrier to export the template for TransnetYX.

Insert the cage number and proceed

Placing samples



Take samples



Husbandry system:	50
Position:	1C
Gender:	male
Marking type:	
Tag:	
Comment:	

Mark the animal with option **1**.
A yellow square indicates where
to insert the sample. Then place
the sample with option **2**.

Please place a sample of type Ohrlochmarkierung als Probe for animal ?_21_1067_M_ at position C1 on carrier 1730.

Animal code	Project	Age	Status
?_21_1065_M_65		36 (5)	
?_21_1066_M_66		36 (5)	

Sample carrier 1730 (T1184199)

↓	1	2	3	4	5	6	7	8	9	10	11	12
A	█											
B	█											
C	█	█										
D												
E												
F												
G												
H												

Place sample Mark animal Register departure Skip animal Skip well Delete sample task

2

1

Placing samples



Take samples



Husbandry system:	50
Position:	1C
Gender:	male
Marking type:	1-99 Löcher und Kerben
Tag:	67
Comment:	

A blue square indicates where samples have been inserted. Wells can be skipped similar to any other sample task.

Please place a sample of type Ohrlochmarkierung als Probe for animal ?_21_1067_M_ at position C1 on carrier 1730.

Animal code	Project	Age	Status
?_21_1065_M_65		36 (5)	
?_21_1066_M_66		36 (5)	

Sample carrier 1730 (T1184199)

	1	2	3	4	5	6	7	8	9	10	11	12
A	■											
B	■											
C	■											
D												
E												
F												
G												
H												

Place sample Mark animal Register departure Skip animal Skip well Delete samp task

TransnetYX QuickOrder option

DESKTOP

The screenshot displays the TransnetYX QuickOrder interface. The top navigation bar includes tabs for Projects, Mating, Samples, IACUC protocols, and Animal search. The Animal search tab is active, showing a search for 'Sample carrier 4:09:46 pm' and 'Sample carrier 4:10:18 pm'. The search parameters are: Carrier number: 1730, Creation date: < 6 month. The search results table shows one entry with Carrier number 1730, Alias T1184199, and Sample type Ohrlochmarkierung als Probe. The number 1730 is highlighted in a red box. The interface also includes buttons for 'Select all', 'Deselect all', 'Remove all filters', and 'Export as Excel worksheet'.

Carrier nu...	Alias	Project	Creation date	Org. unit	Sample type	Sample c...
1730	T1184199				Ohrlochmarkierung als Probe	2

To export the template, change to desktop and go to the *sample* tab. Then select the sample carrier from the list, or search for it.

TransnetYX QuickOrder option

Projects | Mating | Samples | IACUC protocols | Animal search | 29:00 min | Administration | Animal room (touch) | Logout

Search: Sample carrier 4:09:46 pm | Search: Sample carrier 4:10:18 pm | Carrier: 1730

Hide details | All | None | Enter genotype for selection | Export as Excel worksheet | **TransnetYX QuickOrder** | Search selected animals

1...	1	2	3	4	5	6	7	8	9	10	11	12
A	? _21_1065 _M_65											
B	? _21_1066 _M_66											
C												
D												
E												
F												
G												
H												

Projects on this carrier

ID ↑	Project

Carrier details

Carrier number: 1730
Load sequence: top to bottom
Sample count: 2
Alias: T1184199

An Excel file will be created after clicking in the *TransnetYX QuickOrder* option with the template required for ordering.

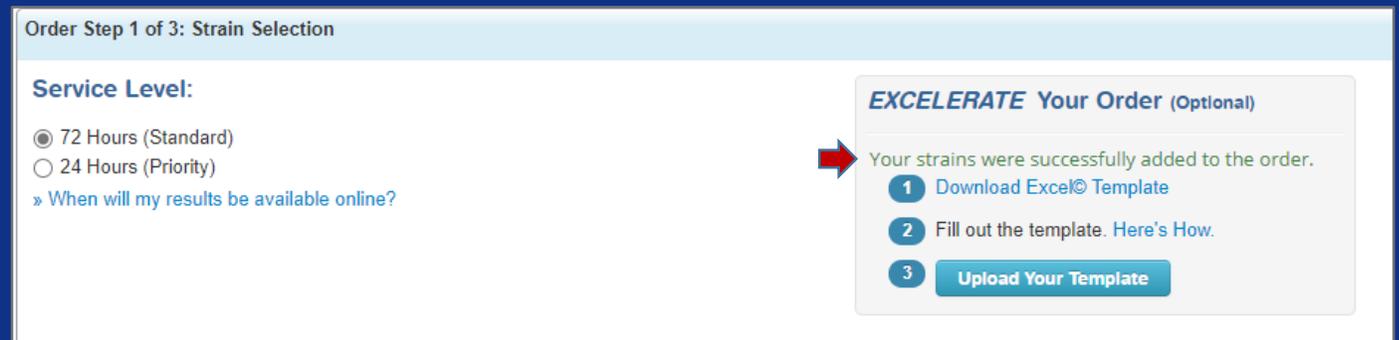
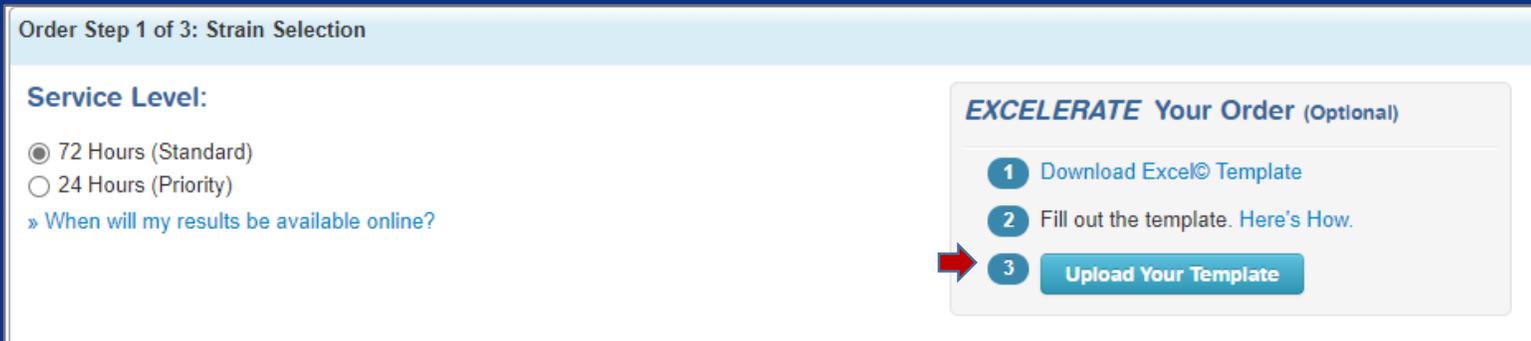
	A	B	C	D	E	F	G	H
1	Well	WellPlate	SampleName	StrainName	IsControl	Omit	ControlResult	
2	A1	T1184199	?_21_1065_M_65					
3	B1	T1184199						
4	C1	T1184199						

Important: in order to have a complete template, the user needs to fill in the "StrainName" field in the Excel file. The "StrainName" field corresponds to the name of the genotype ordering in TransnetYX.

Uploading the template



As a final step, one can go to the TransnetYX account and upload the template in a new ordering. A green message confirms the correct upload. If anything is missing, a red message will appear instead.



Veterinary assessment?

If a veterinarian is needed please contact the following persons:

- Frau Dr. Bettina Kränzlin
- Frau Dr. Stefanie Kirschner
- Frau Dr. Rahef Meriem Ouerdani



Help required?

Creation of a new animal strains, genotyping, information for MGI, RGI

Alexia.Giannakopoulou@medma.uni-heidelberg.de

Heidi.Braun@medma.uni-heidelberg.de

Diego.Pastene@medma.uni-heidelberg.de

Animal experiment application, project licences, veterinary assistance

Bettina.Kraenzlin@medma.uni-heidelberg.de

Stefanie.Kirschner@medma.uni-heidelberg.de

LAVAN problems, administrative intervention necessary

Heidi.Braun@medma.uni-heidelberg.de

M.Ottinger@omikronsystems.de

Diego.Pastene@medma.uni-heidelberg.de



Sources

Links:

<https://medma.LAVAN-os.de/>

<https://medma-testsystem.LAVAN-os.de/login/index>

<https://www.jax.org/>

Pictures:

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Improvements / suggestions

- ✓ Color coding of the projects
- ✓ Color coding by individual agents - stored only in their profile e.g. for breeding or reservation for transport
- ✓ Marking of the mothers until weaning of the young animals in status via a clear sign
- ✓ Marking of animals that are to be used for the next transport in the status
- ✓ Is it possible to install a button for "Select in Rack" when weaning the young animals instead of having to enter the target position manually?
- ✓ View additional information for the individual project licence for the individual severity levels
- ✓ Recording of temperature and humidity

We collect suggestions for improvement for the makers of LAVAN.

Constructive criticism is welcome!

Please send your ideas to: Rahef.Ouerdani@medma.uni-heidelberg.de or Heidi.Braun@medma.uni-heidelberg.de