



UNIwersytet  
MEDYczny  
W ŁÓDZI

## Animal Facility of Pharmacy

**Dean:**

**Professor Elżbieta Mikiciuk-Olasik**

**Director:**

**PhD Bartłomiej Grobelski**



# Animal House :

## Basic equipment :

- **Accommodation for the animals:**  
(mice, rats, guinea pigs and rabbits.)
- **Equipment for behavioral research:**  
(video-monitored mazes, Morris pools, swings chests, fear conditioning apparatus and Intellicage )
- **Equipment for keeping animals profiled:**  
(metabolic cages and cages isolated from environmental conditions.)
- **Animal experimentation, and operating room.**



All equipment compliant with the Directive of the EU and of the Council 2010/63/EU.

# Animal House

## The steps of the research project involving animal house:

1. **The initial findings of the details of experience:**  
Species, number of animals, time keeping, experimental procedures.
2. **Formal arrangements:**  
Estimate individual, persons involved, a form of financing, terms.
3. **Implementation of the experiments:**  
LEC permit, supply of animals together with supporting documents, conduct, reporting, payment.

According to the decree of the Rector No. 58/2012 at the University there is no other place of experiments on animals than Animal House of the Faculty of Pharmacy.

**We invite all researchers to contact at the earliest possible stage of the project:  
e-mail: [animal@umed.lodz.pl](mailto:animal@umed.lodz.pl) , tel/fax: +48 42 272 55 77/ +48 42 272 55 76**

The findings detailed well in advance are a guarantee of success.

# A standard set of questions for researchers:

- 1 What animals Mr / Ms interest (including strain, SPF or not, amount)?
- 2 What is the period of keeping?
- 3 What are the procedures to be performed on animals (including participation researcher)?
- 4 What are the conditions of detention (including how many animals per cage)?
- 5 What kind of feeding and watering?
6. What is the number of the LEC(Local Ethics Committee) permit (including whether you need help in applying)?
7. Source of funding.
- 8 When you have to start studies on animals?

**We offer:**

**When planning experiments submit answers to the above questions to: [animal@umed.lodz.pl](mailto:animal@umed.lodz.pl)**

The answer to 8 question is the beginning of the construction scheme and the resulting estimate.

# Animal House

## The principles of cooperation:

### Regulates:

„Ordinance No. 78/2011 of 14 September 2011. Rector of the Medical University of Lodz ”

### It establishes:

#### Appendix 1:

#### Internal demand:

Mouse: 15 PLN

Rat: 25 PLN

Guinea pig: 30 PLN

Rabbit: 75 PLN

#### External demand:

Mouse: 26 PLN (+tax)

Rat: 38 PLN (+tax)

Guinea pig: 44 PLN (+tax)

Rabbit: 103 PLN (+tax)

#### Paragraph 2:

Step 1: Each start of 30 days stay generates the same cost.

Point 4: The price may be increased to 200%.

### It aims to:

Covering the costs of labor Animal House by researchers using it.

Depreciation of equipment and building together with salaries of employees.

# Animal House



## Sample prices of basic procedures:

- |  |                       |
|--|-----------------------|
| 1. Intraperitoneal injection of a small rodent * | 3 PLN / pcs. **       |
| 2. Operating room                                | 400 PLN / day.        |
| 3. Euthanasia of a small rodent                  | 6 PLN / pcs.          |
| 4. Stay in a metabolic cage                      | 17 PLN/1szt one week. |
| 5. Blood Collection                              | 6 PLN/ pcs.           |
| 6. Keeping 20 wistar rats                        | 500 PLN/ month        |

\* rat, guinea 300g body weight

\*\* price for customers inside University without the indirect costs and tax

**A detailed cost estimate determined individually with the researcher.**

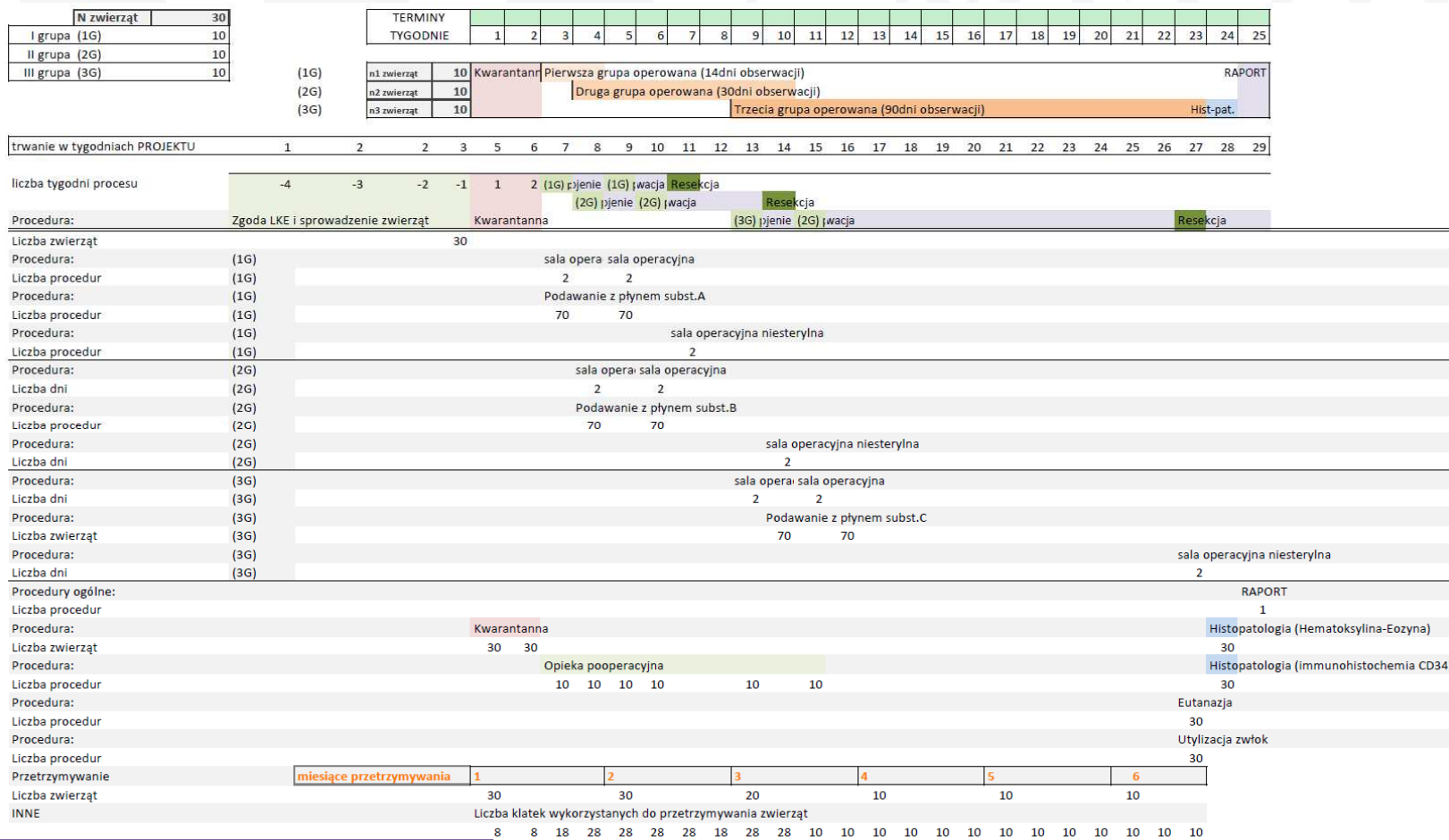
**Each test consists of an individual set of procedures.**

**The investigator may participate in the performance of procedures.**

Only keeping - the cost for external clients      26 PLN mouse, rat 38 PLN, 44 PLN guinea pig, rabbit 103 PLN.

The cost of buying a mouse and rat = cost of keeping.

# Example quick diagram of the project:



KOSZT DLA KONTRAHENTA WEWNĘTRZNEGO (PŁATNE NOTĄ WEWNĘTRZNĄ)			
na szczura	na szczura tygodniowo	na szczura miesięcznie	RAZEM
566,67 zł	22,67 zł	94,44 zł	17 000,00 zł

KOSZT DLA KONTRAHENTA ZEWNĘTRZNEGO (PŁATNE FAKTURĄ)			
na szczura	na szczura tygodniowo	na szczura miesięcznie	RAZEM (z VAT 23%)
923,67 zł	36,95 zł	153,94 zł	27 710,00 zł

# The maximum size of the projects *in vivo*:

Species	type of cage	weight of the animal [g]	number of animals in a cage	max number of animals in the experiment
Mice	1284 L *	to 20 g	9	900
		20-30g	7	700
		30-40g	5	500
	system IVS	10 g	20	600
		20 g	13	390
		30 g	9	270
		40 g	8	240
	Rat	2000P*	to 200g	10
300g			8	1200
400g			5	750
400-600g			4	600
system IVS**		to 200g	4	120
		300g	3	90
		400g - 500g	2	60

Cages for metabolic studies:				
Rats	I		1	12
Mice	II		1	10

\* Cages allow keeping animals in an open system or with a closed HEPA filters.

\*\* IVS system individually ventilated cages which give full insulation from the environment.



# The maximum size of the projects *in vivo*:

Species	type of cage	weight of the animal [g]	number of animals in a cage	max number of animals in the experiment	
guinea pigs	2000P	to 200g	9	1350	
		300g	8	1200	
		400g	6	900	
		500g	4	600	
		500-600g	4	600	
		700g+	3	450	
		system IVC	to 200g	5	150
	300g	3	90		
	400g	2	60		
	500g	1	30		
	500-600g	1	30		
	700g+	1	30		
	rabbits		to 2500g	2	64
			2500g+	1	32

For larger or purposes other than those listed ZW2 researcher adjusts its capabilities.

# Description of special equipment:

## Specialized equipment *in vivo*:

1. The fear conditioning with a full software, a set of monitors and 4 cameras-Any-maze
2. Reciprocating box to avoid the open-field reaction
3. Intellicage
4. Morris water maze with two islands
5. Cross maze for rats
6. Radial maze 8 – Arm for rat
7. Y maze for rats
8. Metabolic cages for rats
9. Metabolic cages for mice
10. IVC system - a system of individually ventilated cages

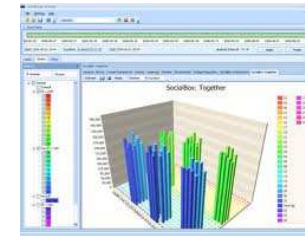
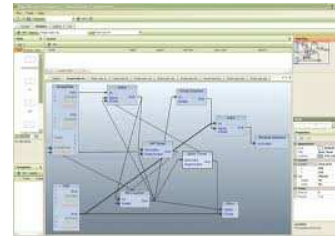
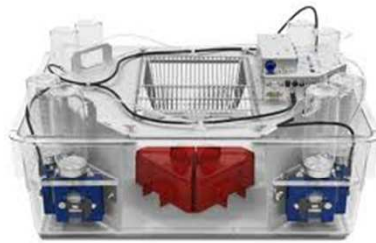
## Specialized equipment *in vitro*:

1. The chamber laminar
2. Inverted microscope with phase contrast
3. UHPLC (Waters)
4. Incubator CO<sub>2</sub>/ nitrogen
5. Incubator
6. Microplate Reader (BioTek) (fluorescence, luminescence, absorbance)
7. + Other equipment (centrifuges, pipettes, shaker, shaker with incubation at 37 ° C., liquid nitrogen)

## Animal experimentation, and operating room

# IntelliCage - NewBehavior for mice

**IntelliCage** allows automatic monitoring of cognitive and behavioral behavior of mutant or the mice living in social groups. One of the biggest sources of interference is the presence of the experimenter. IntelliCage minimizes the impact of the human factor. IntelliCage ensure normal social behavior and the behavior of the mouse animal welfare in every respect. Your mouse will act and react more naturally in undisturbed environment, living in a normal social circle - which will have the effect of increasing the quality and comparability of the data, while minimizing the effort of the researcher.



## Advantages of IntelliCage:

- Fully automated screening for behavioral and cognitive functions of mice living in groups
- social home cage equipped with 4 programmable corners causative (counter drinking, blowing, light).
- Transponder technology allows for an evaluation of the behavior of a single individual.
- The high level of standardization achieved by minimizing human intervention and perform automated monitoring.
- This allows for continuous short-or long-term monitoring.
- This allows researchers to focus on the analysis of the detected results.
- User-friendly software of modules: no need to have a deep knowledge of behavioral therapy.

# The fear conditioning

***The fear conditioning*** uses the two most common fear conditioning paradigms: contextual factors and acoustic fear conditioning.

The system automatically detects the "freezing" and reports:

total time of "freezing", the number of episodes of "freezing", the duration of episodes of release, the delay between stimuli and "freeze". The program also controls the stimuli and allows for complete freedom in the design of the experiment due to of created protocol.

- Sound attenuating chamber (pictured) minimizes the ultrasonic sounds promotions and pheromones.
- Attached to the camera lighting and speaker can be placed freely in the chamber.
- Sound Generator has two independent channels with adjustable frequency and intensity (100-40000 Hz; 1-150 dB).



# ANY-maze

***ANY-maze*** system with software and a set of monitors (4 cameras). The system automatically detects motion and creates reports containing: the total time of freezing, number of episodes, duration of episodes of releasing and delays between stimuli and freezing.

The program allows for complete freedom in the design of an experiment based on protocol created.

Researchers can use the following mazes, which are compatible with ANY-maze:

- *Morris Water Maze*
- *Y maze for rats*
- *Cross maze for rats*
- *Radial maze 8 – Arm for rats*



# Morris water maze

## Morris water maze with two islands-

designed to test spatial memory. Maze has an advantage over conventional mazes such as the elimination of local cues, such as traces of perfume, and the fact that there is no fixed formula to escape.



The image displays two screenshots of the ANY-maze software interface. The top screenshot shows the 'Test schedule report' window with a table of test results:

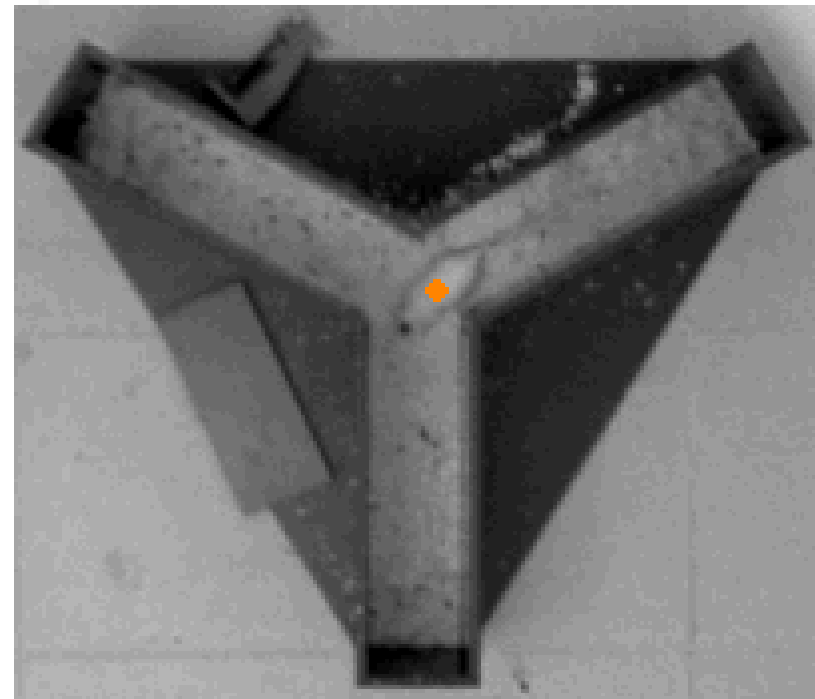
Test	Animal	Code	Stage	Trial	Reason ended	Status
1	1	A	Acquisition	1	Island entry	Completed
2	2	B	Acquisition	1	Island entry	Completed
1	1	A	Acquisition	2		Completed
2	2	B	Acquisition	2		Completed
1	1	A	Acquisition	3		Testing

The bottom screenshot shows the 'Results' window with track plots for four animals (Animal 4, 6, 10, 18) and a 'Planned reports' section. The track plots show the movement paths of the animals in the maze, with a central platform and four quadrants. The 'Planned reports' section includes options for 'Graph report', 'Statistical analysis report', and 'Track plot report'. The 'Reports defined in the protocol' section includes 'Standard result'.

To use with, or without Any-Maze.

# Y maze for rats

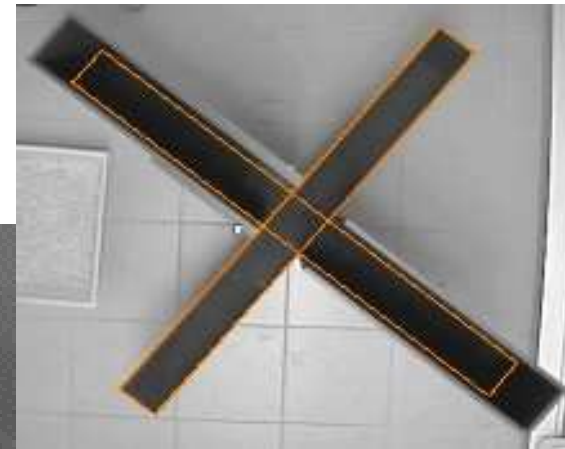
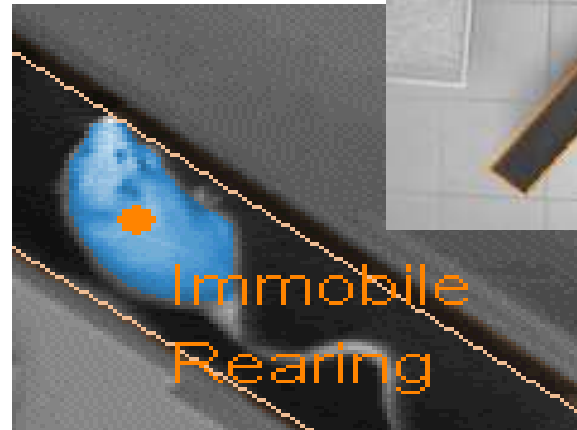
**Y maze for rats** - consists of three identical sleeve. Milder angles Y maze shorten learning time compared with the necessity of performing by the animal sharp turns T-maze.



To use with, or without Any-Maze.

# Cross maze for rats

**Cross maze for rats**- placed at the height of the maze is used to assess the behavior as anxiety in laboratory animals. Used is a conflict between the innate fear of rodents which are open areas, and their desire to explore new environments.



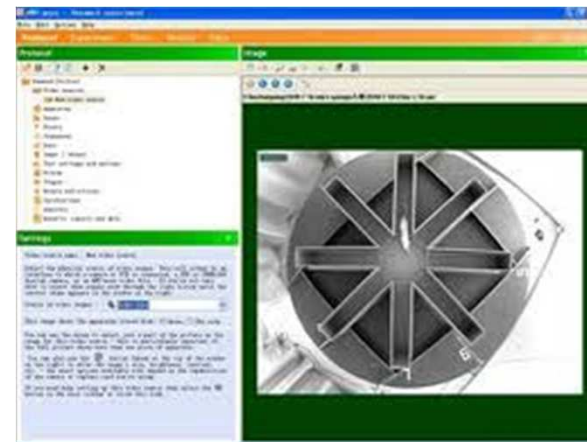
To use with, or without Any-Maze.



# Radial maze 8 – Arm for rat

***Radial maze 8 – Arm for rat***- is used to assess anxiety behavior in laboratory animals. It uses the conflict between the innate fear of open spaces rodents and their desire to explore new environments.

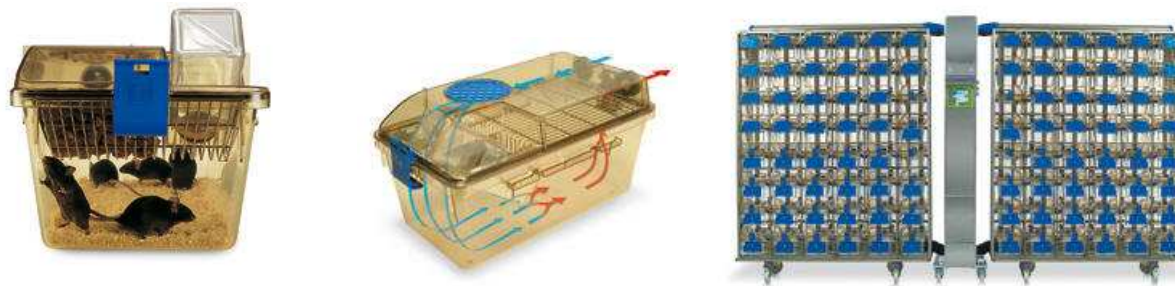
Labyrinths Radial are widely used in the assessment of spatial memory and learning. The device consists of eight arms arranged at equal intervals and a small circular central platform. The design ensures that, after checking the animal at the end of the arm is forced to return to the central platform before making another choice. As a result, the animal is always eight possible variants.



To use with, or without Any-Maze.

# IVC system

**IVC system** - is a system of individually ventilated cages. HEPA filtered air is supplied at low speed to the level of the cage by a self-closing valve when the frame is correctly positioned in the rack Sealsafe™. The diffuser valve cage and baffle direct air along the top, avoiding any shortcuts until the front frame and further down, creating a gentle back flow at the level of litter on the way to the lift.



**Transparent Sealsafe™ provides excellent visibility into the cage at the same time increasing the amount of space for the animals thanks to the limited volume of the cavity on the bottle / feed.**

Perfect for keeping animals without immunity.

# The operating room:

Equipped for procedures under general anesthesia (including inhaled) small animals: mouse, rat, guinea pig, rabbit.

## Tools Available for:

- general surgery,
- dental,
- orthopedic,
- microsurgery.



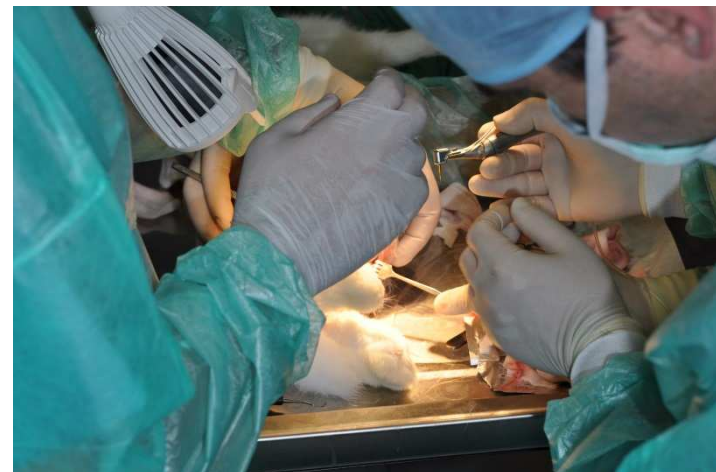
# OTHER competencies

**Animal House to reach their full potential research expands its competence in cooperation with external contractors:**

- **Histopathology ( agreement).**
- **Microbiology ( agreement).**

**Specialists available:**

**Parasitologicans, statisticians, surgeons, orthopedists, vascular surgeons, behaviorists, specialists cell and tissue culture.**



# Acts and legislation regarding Animal Facility:

## Orders Rector of the Medical University of Lodz:

- **Ordinance No. 78/2011 of 14 September 2011. on: determination of the amount and payment rules for services performed by the animal rooms of the Medical University of Lodz.**
- **Ordinance No. 58/2012 of 29 June 2012 concerning: research experiments carried out with the use of experimental animals are under the care of the animal facility of the Faculty of Pharmacy, Medical University of Lodz, applies to all new projects using experimental animals implemented by the Medical University of Lodz.**

## Directives:

- **Directive 2010\_63\_UE\_PL animals used for scientific purposes.**
- **Ministerial list: laboratory animals, 2010.**
- **Ministerial list: breeder powers to conduct breeding.**
- **Ministerial list: supplier animals.**
- **EU COUNCIL DIRECTIVE of 24 November 1986 on the approximation of laws, regulations and administrative provisions of the Member States regarding the protection of animals used for experimental and other scientific purposes (86/609/EEC).**
- **Regulation of the Minister of Agriculture and Rural Development dated 20 June 2007.**
- **The Act of 21 January 2005 on animal experiments Acts. Laws No. 33**

## Consent and permits of Animal House:

- **Entry in the register of entities authorized to conduct experiments in Reger Science and Higher Education: No. 061, 0049 breeding.**
- **The consent of the Minister of the Environment of GMOs No. 84/2012.**
- **Permits the District Veterinary Inspectorate (No. 10616208).**
- **Allowing Provincial Pharmaceutical Inspectorate (permit No. 2/N2012, no 1/N2012).**

# General working in Animal Facility:

## Researcher should:

- Always keep cleanliness regime.
- Respect the area clean / dirty.
- Work in a designated area.

## Researcher receives:

- Full equipment.
- Full access (24h/7days a week)
- Support specialists.



# Laboratory of Experimental complex *in vivo* and *in vitro*

