



浙江大学实验动物中心

Zhejiang University Laboratory Animal Center

用户使用手册

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浙江大学实验动物中心用户使用手册

浙江大学实验动物中心是面对全校科研单位进行动物实验的公共服务平台,实验动物质量关系科研的成败及结果可靠性,加强对实验动物设施的管理,正确使用实验动物设施,是每个实验人员应有的责任及义务,请大家协助搞好此项工作。为此特制作本手册,请使用本设施的实验人员遵守执行。

人员准入制度

一、进入动物中心的实验人员要通过中心微信公众号报名(二维码见下方)。根据网上通知,经准入证理论培训及考试,合格后参加各个区域的“手拉手”实践,获得中心准入资格,并在指纹采集后,才能进入允许的动物设施实验。

一般情况下,动物中心每月举行1次准入培训。指纹采集的时间定于每周三下午1:30—3:00。

二、具有准入资格的人员每次进入动物实验区前,要在中心大厅、第一更衣室门口进行指纹识别方能进入,违反规定者按违规处理。



ZJULAC

User Manual for Zhejiang University Laboratory Animal Center

Zhejiang University Laboratory Animal Center (ZJULAC) is a public-served platform for all scientific research units of the University who will do animal experiments. The quality of laboratory animal concerns successful experiment and reliable result. Standardizing laboratory animal facilities management and using the laboratory animal facilities properly are the responsibility and obligation to every experimenter. Let's do it together. We make this user manual for everyone who will use the facility, please follow it.

Access permit system

I. New experimenters can sign up by WeChat account of ZJULAC (see the quick response code below). Follow the information of the WeChat, attend the permit theory lecture and pass the examination, then you can apply for the "hand in hand" practice in one region of our facility. After that, you get access qualification for the LAC. You can enter the animal building to do experiments after your fingerprint is captured.

Generally, ZJULAC will give one permit lecture every month. Fingerprint capture will be carried out in the LAC building at 1:30 to 3:00 PM every Wednesday.



ZJULAC

II. Every qualified experimenter should have fingerprint recognition at the desk of the ZJU hall and the door of the **first dressing room** each time before entering the barrier system. Anyone who doesn't follow the rule will be punished.

实验人员的进出

一、四楼屏障区域：

1、实验人员走出电梯，在屏障设施门口换穿**外部红色拖鞋**，将自己的鞋子整齐摆放鞋架上；

2、在人员登记表上登记导师与学生姓名；

3、将外部拖鞋脱在“第一更衣室”门口，穿着袜子进入**第一更衣室**；

4、在一更室内脱去外衣裤，放入衣柜，用消毒液洗手或喷雾手；

5、进入“**第二更衣室**”。在更衣室内穿消毒隔离衣裤，戴帽子、手套及口罩，隔离衣要塞进裤腰内，系紧袖口（手套包在袖口外）及裤腰，系紧帽沿或搭上颈部尼龙扣，本人衣物及头发不要暴露在外（**图 1-5**）；



图1
全身穿戴图



图2
颈部搭扣图



图3
口罩系带图



图4
衣服系紧图



图5
戴手套图

6、带着手套在消毒液内浸泡 10 秒时间；

7、每次 1 人进入“风淋室”。先打开风淋室外门，进入后关门，风淋 20 秒钟，期间两门不要同时打开；

Entry and exit forexperimenters

I .Barrier district on the 4th floor

- 1.Experimenters walk out of the elevator;puton thered **outside slippers**at the door of each district,and put their shoes on the shelf tidily.
2. Register names of the tutor and experimenters on the registration form.
3. Take off the **outside slippers** at the door of **the first dressing room**, and then walk in.
4. Take off your outerwear and trousers in **the first dressing room**. Put them in wardrobe, and wash or spray your hands with sterilizing fluid.
5. Walk into **the second dressing room**. In the room, put on sterilizedisolationclothes, hat, gloves and facemask.The isolation gown should be tucked into the waistband. The cuffs (wrapped by gloves) andwaistband should be fastened, while the brim of a hat should be fixed or wrapped by velcro around neck. Fasten cuffs (stuff cuffs under gloves), sash and belt ofhat. Clasp the nylon button. Do not expose your clothes and hair (**picture 1-5**).



Picture 1
General figure



Picture 2
Clasp the nylon button



Picture 3
Put on the facemask



Picture 4
Fasten the belt



Picture 5
Put on gloves

6. Putyour hands with rubber gloves in sterilizing fluid for at least 10 seconds.
7. Only one person can be allowed to enter the **air shower room**each time.Opentheouterdoor, walk into the room and close the outsidedoor. Take air shower for 20 seconds. During the shower time, twodoors of the air shower room are prohibited to open at the same time.

8、风淋停止后，打开内门，进入屏障区域，在走廊上穿内部消毒拖鞋；

9、进入内准备间，拿取实验用物品，直接进入自己的动物实验室，不得进入无关实验室，尽量避免在实验室与内准备室之间来回走动；

10、人员出来时，穿着消毒隔离衣从实验室通过外出走廊，走出屏障区域，将内部拖鞋脱在外准备室指定位置；

11、至第一更衣室脱去隔离衣裤，放入指定框内，口罩及手套丢弃入垃圾桶，换穿自己衣服，离开屏障区域；

12、人员进出设施路线：更衣室→内准备室→中央走廊→实验室→外出走廊→屏障外(图6)。

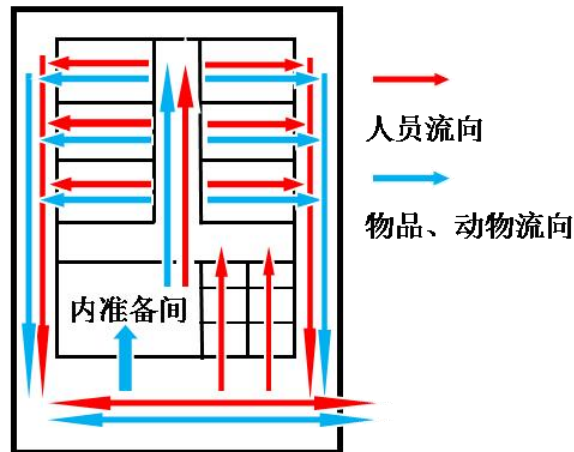


图6

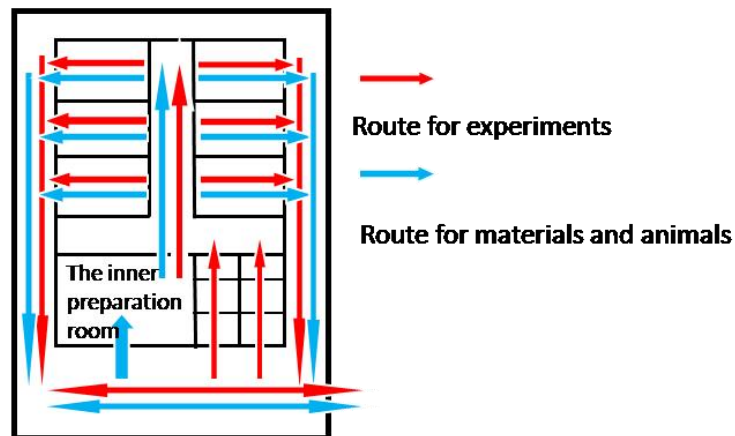
8. As air shower stops, open the inner door and enter the barrier system. Put on **internalsterilizedslippers** in the hallway.

9. Walk into the “**inner-preparation room**”, take materials for experiment, go directly into the animal experiment room. Other rooms without relation are prohibited to enter. Try best to reduce movement between the animal experiment room and the inner preparation room.

10. After experiment, Experimenters walk out of the barrier system from the animal experiment room through the outer passage with sterilized isolation clothes. Take off the inner slipper and put them into the specific bucket in the **out-preparation room**.

11. Walk into **the first dressing room**, take off the isolation clothes, and put them into the appointed basket. Cast used facemask and gloves into the trash can. Put on your own clothes and go out of the barrier region.

12. Route for experimenters in and out of the barrier system: dressing room → inner preparation room → central passage → animal experiment room → outer passage → out of the barrier. **(Picture6)**



Picture 6

二、二东实验区域：

1、实验人员走出电梯，在二东大门口换穿拖鞋，将自己的鞋子整齐摆放鞋架上，在人员登记表上登记导师与学生姓名；

2、刷指纹进入二东更衣区，穿隔离衣，戴手套及口罩；

3、直接进入自己的动物实验室，禁止进入不相关的饲养室；

4、实验完毕后，从原路退出实验室及中间走廊；

5、回到更衣区脱去隔离衣放入指定容器，口罩及手套丢弃入垃圾桶，按开门键走出区域；

6、在二东区域门口换上自己的鞋子，将拖鞋整齐放回鞋架，乘电梯离开；

7、谢绝二东实验人员去四楼屏障区域。

三、一楼大动物饲养区域：

1、实验人员刷指纹进入一楼饲养室，穿白大衣，换穿拖鞋，将自己的鞋子摆放整齐，在人员登记表上登记导师与学生姓名；

2、实验完毕后，把动物放回原位，自觉打扫实验室卫生，离开实验室；

3、脱去白大衣，将口罩及手套丢弃入垃圾桶，换上自己的鞋子，将拖鞋整齐放回鞋架，按开门键离开饲养区；

4、谢绝一楼实验人员去二、四楼实验区域。

四、谢绝外来实验人员进入二西保种区。

II. The east experiment area on the second floor

1. Experimenters walk out of the elevator, exchange slippers at the door of the east district on the second floor, and put their shoes on the shelf tidily. Register the names of the tutor and students on the registration form.
2. Open the door by fingerprint identification, and go into the dressing room of the district. Put on isolation clothes, gloves and face mask.
3. Go into the animal experiment room directly. Other unrelated rooms are prohibited to enter.
4. After experiments, please go out of the experiment room and into the inner passage by the way you come.
5. Go back into the dressing room, take off the isolation clothes, and put them into the appointed container. Cast used facemask and gloves into the trash bin. Open the door by the key next to the door, and go out of the district.
6. Take off the slippers and put them on the shelf tidily, put on your own shoes and leave by the lift.
7. Experimenters who do experiments in the east on the second floor are prohibited to go to the barrier system within a week's time.

III. Large animal feeding areas on the first floor

1. Experimenters walk into the animal feeding room on the first floor by fingerprint identification, put on a white lab coat and slippers, and put your own shoes on the shelf tidily. Register the names of the tutor and students on the registration form.
2. After experiments, put animals back to the former place and clean the lab before leave.
3. Take off the white lab coat and cast used facemask and gloves into the trash bin. Put on your own shoes and put the slippers on the shelf tidily. Open the door by the key next to the door, and go out of the feeding district.
4. Experimenters who do experiment in district on the first floor are prohibited to go to district on second and fourth floor within **a week's time**.

IV. Experimenters not belong to the west **conservation area** on the second floor are prohibited to enter this area.

实验动物的进出

一、进入饲养室的动物必须来源于可靠的有《实验动物生产许可证》的单位，自己实验室饲养的动物不准带入动物中心屏障设施。

二、上海斯莱克、南京大学模式动物研究所、维通利华及省医科院生产的大宗品系大小鼠，须由动物中心统一购买，进入中心饲养室，其他单位生产的大小鼠不得进入中心饲养室。

三、南京大学模式动物研究所及上海南方模式生物研究中心的转基因小鼠，必须持有动物《合格证书》及《健康报告》，才能直接进入中心饲养室。其他国内外的转基因小鼠必须经过隔离检疫，合格动物才能进入中心饲养。

四、符合条件的动物须在动物中心 135 室开具《实验动物准入单》，凭准入单将动物交给中心工作人员。

五、进入四楼屏障区的动物须经外表消毒。消毒流程如下：检查动物包装盒不能破损，然后在包装盒外表喷雾酒精，将包装盒放入物品传递仓经紫外线照射 20 分钟，内准备室人员在传递仓内划开包装盒，把大小鼠拿出放至饲养盒内，移至预约的饲养室，包装盒不要传至内准备室。

六、实验用完的大小鼠从实验室通过外出走廊，传至屏障外实施安乐死。

七、凡从四楼屏障区域传出的动物禁止返回至四楼屏障区域；进入保种区的小鼠必须经过净化处理；二东区域的动物不能进入四楼饲养。

八、从饲养室拿出的动物必须登记，内容包括日期、姓名、数量、去向（处死、取走）。

Guide for in and out of lab animals

- I . Animals entering the feeding room must come from reliable units with **laboratory animal production permit**. Animals housing in nonstandard facilities such as PI's labs are forbidden to bring into barrier facilities of ZJULAC.
- II . Routine mice and rats come from SLAC, Model Animal Research Center of Nanjing University, Beijing Vital River Laboratory Animal Technology Co., Ltd, or Zhejiang Academy of Medical Sciences are allowed to enter feeding room of ZJULAC, but they must be ordered by ZJULAC. All mice and rats from other companies or organizations are forbidden to enter directly.
- III. Gene modified mice from Model Animal Research Center of Nanjing University and Shanghai Research Center of the Southern model organisms with **animal quality certificate** and **animal health report** are allowed to enter feeding room of ZJULAC directly (except the conservation area). Other genetically modified mice from domestic or foreign organizations must be quarantined; only qualified animals are allowed entering the ZJULAC.
- IV. With the **animal access permit** from room 135 in ZJULAC, experimenters can hand over the qualified animals to the staffs of ZJULAC.
- V . Boxes with Animals entering the barrier areas on fourth floor must be surface sterilized. The disinfection process is as follows: Check the animal packing box, make sure it is not broken. Spray 75% alcohol on the outer surface of the box, and then put it in **the transfer chamber** for 20 minutes under ultraviolet irradiation. After that, Staffs in the **inner preparing room** open the box in the transfer chamber, take mice or rats out and put them into sterile feeding cages, then take these cages to the applied feeding room, packing boxes are prohibited enter the inner preparing room.
- VI. After experiments, mice or rats can be taken out of barrier system by outer passage, and then euthanasia is performed.
- VII. All animals taken out of barrier system on fourth floor are not allowed to return. Mice must be retrieved before they enter the conservation area. Animals from east district on the second floor are not allowed to enter the feeding district on fourth floor.
- VIII. Animals taken out of feeding room must be registered on the registration form, including date, name, number, and other further process (Euthanasia, taken away).

实验物品的进出

一、除了实验用品，私人物品包括手机、手表等要放置在屏障设施外，不得带入。

二、不要将贵重物品放在更衣室，否则遗失后果自行承担。

三、进入四楼屏障区的任何物品须经消毒。物品进出程序如下：

1、凡能经受高温高压的物品，如金属、塑料、纤维制品等，提前与外准备室人员联系，打包后经“高压灭菌柜”121℃，50分钟灭菌，传入屏障使用；

2、不耐高温的物品，如仪器、试剂等，在外表所有面喷雾酒精作表面消毒，放入“物品传递仓”用紫外线照射20分钟，传进屏障使用；

3、记录有实验方案的纸张等可以放在透明塑料袋中，密封后外面喷雾酒精经物品传递仓传入屏障内，紫外照射20分钟后传入。使用时隔着塑料袋阅读；

4、屏障内使用完毕的物品，从实验室通过“外出走廊”传至屏障外；

5、有关实验废弃物丢入指定的医疗废弃物垃圾桶，锐器丢入锐器回收桶。

Guide for in and out of experimental items

I .Except for necessary experiment materials, personal belongings, such as mobile phones and watches are not allowed to take into the barrier facilities.

II .It is not allowed to put valuables in **the dressing room**. Otherwise, the result of lost will on experimenters' own responsibilities.

III .Everything must be sterilized before taken into the barrier areas on the fourth floor. Procedures for in and out of experimental materials are as follows:

1. Items, such as metal, plastic or fiber products, which can bear high temperature and high pressure must be sterilized by **autoclave** at 121 °C for 50 minutes after being packed. Please contact the staffs of ZJULAC in **outer preparing room** and they will do it for you.

2. Items, such as instruments, reagents which can't bear high temperature, can be sterilized by spraying 75% alcohol on outer surface, then put them into **the transfer chamber** and make them under ultraviolet irradiation for 20 minutes. After that, they are allowed to bring into barrier system.

3. Documents such as papers with experimental scheme on it can be placed in a transparent plastic bag. After sealing the bag, we sterilize it by spraying 75% alcohol on its outer surface. Then, they are passed into the barrier system by **the transfer chamber** and leave them under ultraviolet irradiation for 20 minutes. You can read them through the plastic bag.

4. After experiments, materials can be taken out of barrier system by **outer passage**.

5. Experimental waste must be cast into the **designated medical rubbish can** and sharp materials such as needles and blades must be put into the **special recycling bin**.

饲养室操作制度

一、实验人员要凭指纹进入屏障设施，在自己的屏障区域及实验室实验，做完实验尽快退出屏障设施。实验人员实行一人一指纹制，不得带无证人员进入屏障设施。

二、设施内讲话要低声，走路要尽量轻盈，禁止大声喧哗。

三、在微生物控制相同级别区域之间搬移小鼠，要先将小鼠放入消毒的 IVC 密封笼盒，从传递仓传出，至另一区域对笼盒外表作酒精消毒，紫外照射 20 分钟后传入。

四、IVC 笼盒操作：从 IVC 笼架上拔下笼盒，向上扳开蓝色锁扣，打开上盖，移去不锈钢网盖，即可对动物实施操作。实验完毕后，将底盒盖上网盖，放上饲料；将上盖对准底盒密封盖好，笼盖与底盒匹配，再向下按压蓝色锁扣盖紧笼盒，然后插上水瓶，将 IVC 笼盒进出风口与笼架相应通风管对准，插入笼盒（图 7）。要确保笼架通风管插入笼盒风口；水瓶必须插入笼盒，要既能出水又不会自动漏水。



步骤1：网盖盖上底盒



步骤2：盖上上盖



步骤3：插上水瓶



步骤4：松开蓝色锁扣



步骤5：扣紧蓝色锁扣



步骤6：笼盒进出风口

图 7

Operation guide for feeding room

- I.** Experimenters enter the barrier areas by fingerprint identification; do experiments at special location in barrier system or lab. And they should leave the barrier areas as quickly as possible after he has finished his experiments. Qualified experimenter only can use his own fingerprint for himself, but it is prohibited to help other people without qualification enter the barrier areas.
- II.** Please speak gently and walk lightly in barrier areas. Speak loudly is not allowed.
- III.** Mice can be transferred between different districts with the same level of microorganism control inside ZJULAC. The process is as follows, Put mice in a sterilized IVC, seal the cage, and move it out of one barrier system by transfer chamber. Transfer the cage to another barrier system; sterilize the outer surface of the cage with 75% alcohol and make it under ultraviolet irradiation for 20 minutes, then take the cage into the new system by transfer chamber.
- IV.** Operations for IVC: pull off a cage from IVC shelf, push up the **blue buckle** of it, open the cage cover, move off the stainless-steel cover, then you can do experiments on animals. After experiments, put the stainless-steel cover on the bottom box and put some feed on it. Put the cage cover hermetically sealed on the bottom box and make sure the cover adapts well with the bottom box. Press down the blue buckle to fasten the cover, and then plug the water bottle into box cover. Put the cage back into the IVC shelf, and make sure air inlet and outlet of the IVC connect well with the corresponding ventilating pipe of IVC shelf (**pictures 6-11**). Make sure the ventilating pipe of IVC shelf inserted into inlet and outlet of IVC. And make sure the water bottle is inserted into the cage properly. Then the mice can get water from the bottle, while water does not leak out automatically.



Step 1 put the stainless cover on the bottom box



Steps 2 cover the cage cover



Steps 3 plug water bottle



Steps 4 unlock the blue buckle



Steps 5 lock the blue buckle



Steps 6 air inlet and outlet of the IVC

Picture 7

五、为防止多只雄鼠打架，小鼠要按照 1 雄：1-2 雌合笼配种；配种鼠周龄应至少 8-10 周以上；小鼠雌雄合笼 2 个月后不产子，需要考虑更换种鼠；仔鼠 21 天哺乳期过后要及时分笼，不论实验或育成鼠，每盒饲养数量控制在 5 只及 5 只以内。

六、动物要放在指定位置，繁殖鼠与分笼鼠要贴上相应标签，繁殖鼠要关注分笼日期；分笼后的小鼠要注意饲养日期及体重，以便及时使用，不造成浪费。

七、繁殖小鼠使用红、黄、绿三种颜色的圆形标记贴纸，以使用户与管理人员沟通。三种颜色分别表示：红色——该笼小鼠健康有问题，黄色——该笼小鼠需要分笼，绿色——该笼小鼠需要移去。

八、小鼠出现质量及生育等问题要及时向管理人员反映，进行沟通。

九、实验仪器使用完毕要放回原处，不要影响别人使用。

十、大动物剃毛请提前准备盛水容器，避免毛发影响饲养区环境。

V Generally, 1 male mouse is mated to 1 or 2 females in one cage to prevent fighting between males. 8-10 weeks or older is proper breeding age. If mice mated in one cage don't give birth to pups for 2 months, they should be considered to be replaced. After 21 days of lactation period, pups should be weaned and be moved out of the breeding cage. No more than 5 adult mice are allowed to breed in one cage, no matter for experiment or production.

VI. Animals must be placed in designated position. Corresponding record cards should be attached on cages housed mice for production or experiment. Pay attention to the weaning date of mice for production. Record age and weight of weaned mice, so that we can make use of them for experiment in time to avoid waste.

VII. Circular labels in three colors (**red**, **yellow**, and **green**) are used to indicate health condition for breeding mice, which are convenient for communications between experimenters and staffs of ZJULAC. The three colors mean as follows, **red** –some health problems, **yellow** –need weaning, **green** –should be removed.

VIII. Once experimenters find unusual situations such as quality and fertility problems of mice, please report them to the staffs of ZJULAC as soon as possible.

IX. After experiments finished, instruments should be put back, which will be convenient to other users.

X. Prepare a container with some water before large animals will be shaved. Then the hairs will be collected well, and will not influence the feeding area.

违章处理

一、自录入指纹获得准入资格后，每个用户获得 12 分，如有违反中心有关规定的行为，将扣除相应分值。如 12 分扣完，将取消其中心准入资格，并禁止在 1 年内重新申请。

二、如有下列违规行为者，一经发现将扣除 12 分：

- 1、擅自携带无《实验动物准入单》的动物进入屏障实验室；
- 2、本人有中心准入资格，但擅自带未获得准入资格的人进入中心任何饲养区域。

三、如有下列违规行为者，一经发现将扣除 6 分：

- 1、穿着消毒隔离衣到屏障外，然后又折返进入屏障内；
- 2、擅自进入未开通指纹权限的饲养区域，或者进入过二东区域的一周内，又进入四楼屏障区域；
- 3、擅自将手机等私人物品及未经消毒的物品带入屏障内。

四、如有下列违规行为者，一经发现将扣除 3 分：

- 1、随意进入别人实验室，未经允许拿别人物品；
- 2、屏障内随意脱去口罩、手套、帽子等；
- 3、大厅不按指纹进入动物中心，进入屏障不进行实名登记者；
- 4、任何破坏实验室公共设施设备，除外要视情节严重进行赔偿。
- 5、表现出诸如头发露出帽沿等穿戴不规范的行为，屡教不改。

五、无准入资格的人员擅自进入中心任何饲养区域，禁止其一年内申请准入。

Violation processing

I .You will get 12 points after you got access qualification and have your fingerprint acquired. Corresponding scores will be lost if you break the rule of SOPs in ZJULAC. After you lose the whole 12 points, you will lose your access qualification, and you are prohibited to apply again within one year.

II .Any violation as follows, 12 points will be lost.

1. Carry animals without **animal access permit** into barrier district.
2. Qualified experimenter helps others who have not qualification enter any feeding district of ZJULAC.

III .Any violation as follows, 6 points will be lost.

1. Go back into the barrier system with used sterilized clothes after you have left the barrier system.
2. Enter the feeding area without fingerprint access qualification. Re-enter the barrier area on the fourth floor after have entered the east area on the second floor in one week.
3. Take personal items such as mobile phone or other materials not been sterilized into the barrier system without permission.

IV .Any violation as follows, 3 points will be lost.

1. Walk into unrelated lab casually, or take other people's materials without permission.
2. Take off mask, gloves, hats and etc. in barrier system.
3. Enter ZJULAC without fingerprint identification in the hall, or enter barrier system without real-name registration.
4. Any damage action to public facilities and instruments in ZJULAC. Besides, compensation should be demanded according to the severity.
5. Incorrect dressing behaviors, for example, holding hair in hat not properly, and do it again after repeated admonition.

V .Anyone have no access qualification enters any feeding area of ZJULAC without permission, will be prohibited to apply for access permit in one year.