

# Basic Concepts in Mouse Studies



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# WHY ANIMAL RESEARCH?

## Why Animals Are Used:

- Biological Similarity: Mice share over 98% DNA with humans.
- Shared Health Issues: Animals suffer from similar diseases like cancer, diabetes, and heart disease.
- Life Cycle: Shorter life cycles allow for multi-generational studies.

## Key Contributions:

- Organ Transplantation: Immunology insights from animal studies enable safe transplants.
- Cardiovascular Advances: Dogs and rats help develop treatments for hypertension and heart disease.
- Polio Eradication: Vaccines developed using rhesus monkeys.
- AIDS Research: Simian AIDS models aid in understanding human AIDS.







## WHY ANIMAL RESEARCH?

The use of animals in some forms of biomedical research remains essential to the discovery of the causes, diagnoses, and treatment of disease and suffering in humans and in animals.





# Animal Study Guidelines & Ethics

## Key Regulations

-  Animals must not be taken out of the animal center.
-  Experiments require an approved animal protocol.
-  Personnel must be listed in the protocol and properly trained.
-  Facility access: 07:00–19:30; entry outside these hours is prohibited.
  -  Violations will be reviewed in meetings with the PI's name disclosed.
-  Experiments must follow the **3R principles (Replacement, Reduction, Refinement)**.

## Mindset & Ethics

-  Gratitude, careful planning, and minimal use of animals.
-  Annual memorial ceremony to honor the contribution of lab animals to medical research.

【重要】請勿放置動物實驗照片/影片至社群軟體

各位研究人員日安:

本校實驗動物照護與使用委員會(IACUC)提醒您，在實驗研究過程中如使用動物來進行實驗，基於3R精神及動保法的規定，請勿將用來記錄實驗過程中的照片/影片，放置到社群軟體上(FB、Line、IG、Twitter等等)，以避免違反動保法(第27-1條罰則)。一旦經匿名檢舉管道或由本會發現此情形，將嚴格執行違反動物福祉的罰則，敬請各位研究人員務必遵守。

實驗動物照護與使用委員會(IACUC) 敬啟

**動保法第27-1條** 散布、播送或販賣違反第六條、第十條或第十二條第一項之文字、圖畫、聲音、影像、電磁紀錄或其他物品，或公然陳列，或以他法供人觀賞、聽聞者，處一年以下有期徒刑、拘役或科或併科三萬元以下罰金。但為供學術研究或公益用途者，不在此限。

# Animal Study Proposal Content

Includes:

- Basic Information
- Personnel Details
- Animal Requirements
- Research Purpose & Significance
- Compliance with 3R Principles
- Experimental Design Details
- Drug & Injection Procedures
- Pain Assessment
- Euthanasia Methods
- Breeding Strategy

國立成功大學  
實驗動物照護與使用委員會審查同意書  
Affidavit of Approval of Animal Use Protocol  
National Cheng Kung University

同意書編號(IACUC Approval No): 112155

計畫主持人: 許釗凱

職 稱: 副教授/主治醫師

單 位: 皮膚學科

醫學院動物中心(包含12F動物中心、B1代養區、斑馬魚核  
心實驗室、維生素B斑馬魚實驗室)  
飼養地點:  
其他飼養地點:

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心實驗室、維生素B斑馬魚實驗室)  
實驗地點:  
其他地點:

計畫名稱: 探討失養型表皮分解性水疱症的皮膚發炎分子機轉與治療

本計畫之「動物實驗申請表」業經實驗動物照護及使用委員會 ☒ 實質 ☐ 形式審查通過。

# Principles for Animal Study Proposal Writing

## **Replacement**

- Use lower-order or invertebrate species as alternatives
- Utilize in vitro models instead of live animals
- Apply non-biological methods (e.g., computer simulations)

## **Reduction**


- Use the minimal number of animals necessary for valid results
- Refer to literature to avoid excessive animal use
- Apply statistical analysis to determine the appropriate sample size
- Conduct pilot studies before large-scale animal experiments
- Avoid unnecessary repetition of experiments
- Use non-invasive observation techniques or genetically modified animals

## **Refinement**

- Minimize stress, discomfort, and pain in experimental animals
- Provide suitable and feasible housing conditions
- Implement professional and ethical animal care practices
- Improve proficiency in animal handling techniques
- Ensure precise and well-designed experiments

# Training Courses

-  Includes:
- Restraint
  - Blood collection
  - Injection
  - Feeding
  - Genotyping
  - Surgical procedures

 Note: At NCKU, the entire system is in Chinese, making it unfriendly for international students!

NCKU LACUC

回首頁 線上說明 訂購與排班 帳務查詢 單位與代價 表單/報表查詢 預約查詢記錄 預約備發及設備 教育訓練 基本設定 小鼠淨化復育及胚胎冷凍 違反實驗動物倫理

預約儀器及設施 / 操作台預約 / 12F潔淨區操作台 / CH1-CH6 / 報表

操作台預約

預約類型 操作台 / 12F潔淨區操作台/CH1-CH6 使用者  指導教授

預約日期

Time spent: 0.376 seconds

預約項目 費用說明 注意事項

顯示說明: \* (不開放預約) (無 Iacuc No) 未通過訓練 (基本資料中無相對設備的教育訓練課程「証號」) 未通過訓練及無 Iacuc No

位置 操作台 站	CH1	CH2	CH3	CH4	CH5	CH6
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07:30 ~ 08:00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

國立成功大學實驗動物照護管理系統

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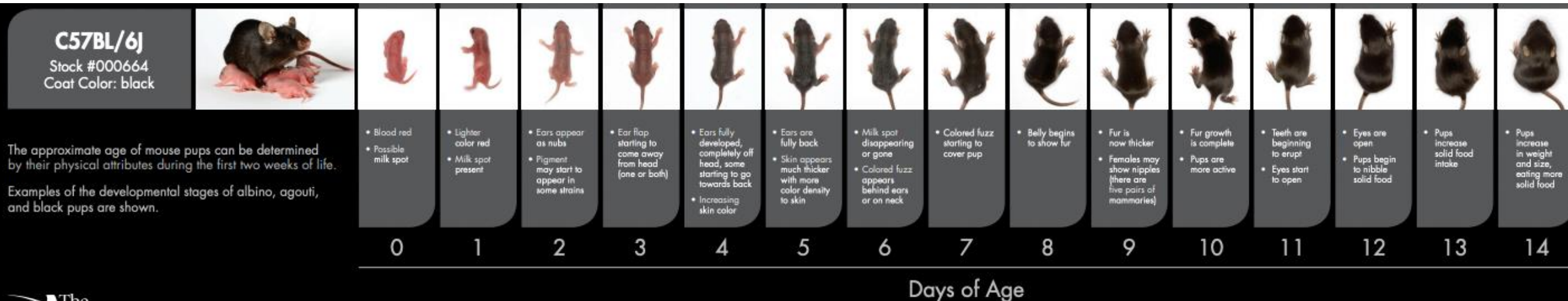
Password:

提醒: 帳號與密碼有區分大小寫  
Remind: User ID and Password are case sensitive!



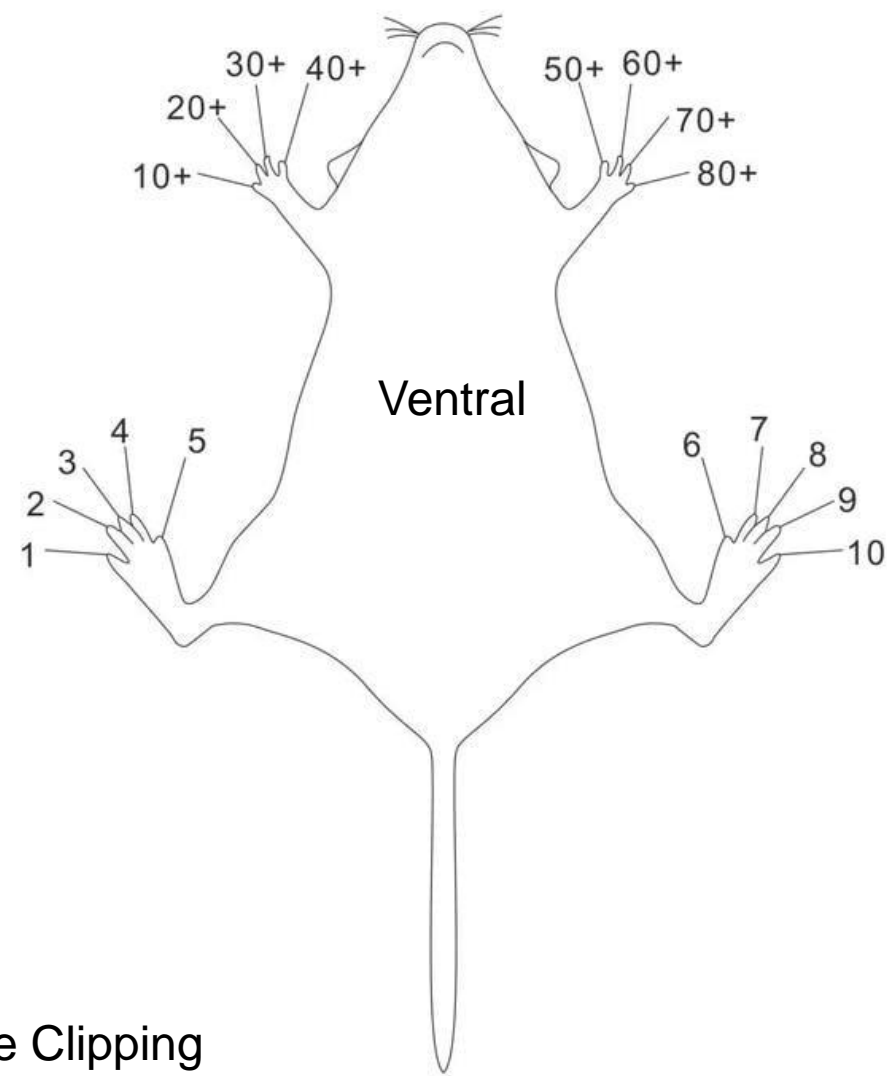
# Physiological Characteristics of Mice

Condition	Period	Condition	Period
懷孕期 Gestation Period	19–21 days	仔鼠離乳期 Weaning Age	20–22 days after birth
平均仔產數 Average Litter Size	6–10 pups	公鼠配種期 Male Breeding Age	10–12 months
剪腳趾編號 Optimal Age for Toe Clipping	5-10 days after birth	母鼠配種期 Female Breeding Age	8–9 months
開眼期 Eye Opening	11–12 days after birth	Life span	1.5–3 years



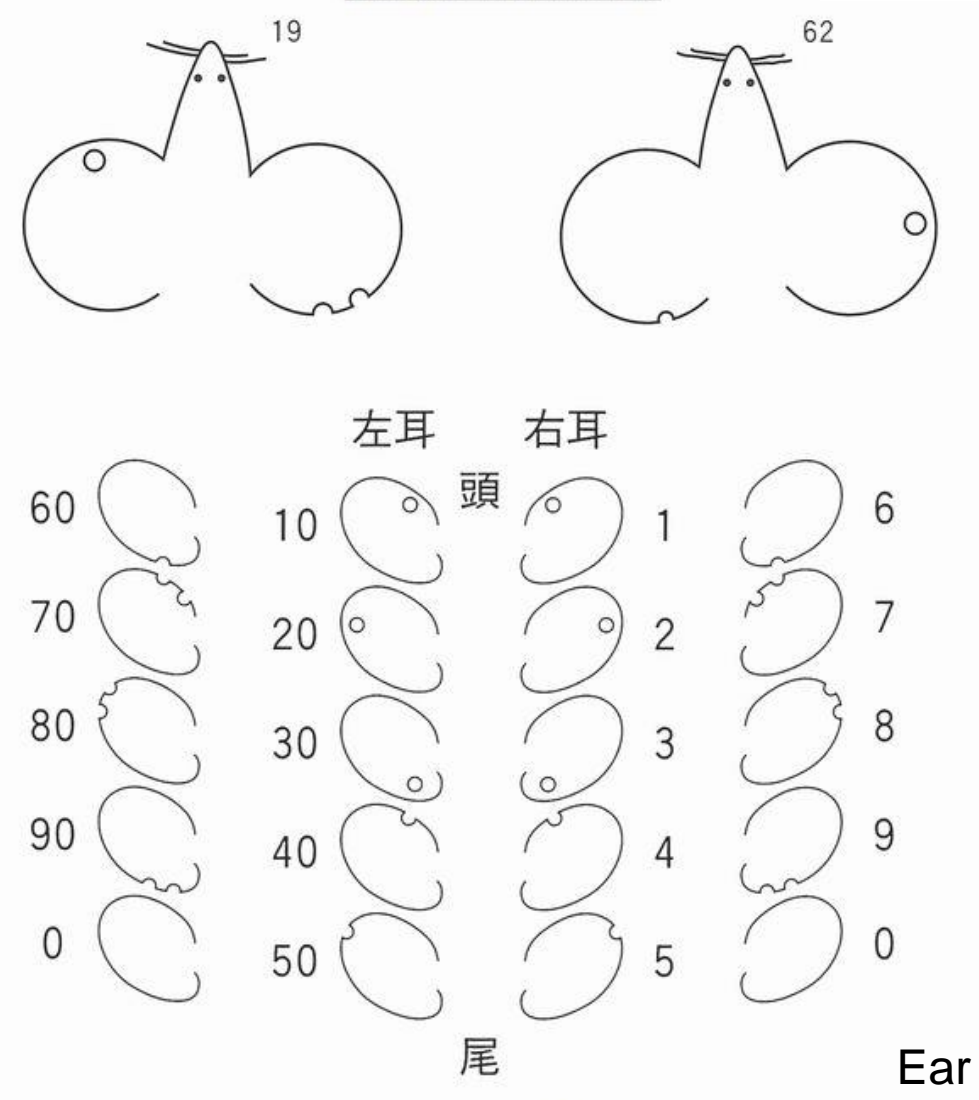


# Methods for Mouse Identification



Toe Clipping

個体識別（耳パンチ法）



Ear tagging

# Mouse Maintenance Fees at NCKU Animal Center

動物種類	原價	優惠價	備註
Mouse IVC中心管理(H1、2、3、6、7、8) 7折	25元/天/cage	17.5元/天/cage	User自行繁殖之仔鼠於三週齡開始計算代養費，並且必須分籠飼養。  自113年8月1日起，RAT IVC中心管理(H10)收費調整為28元/天/cage(原收費標準40元優惠7折)。
Mouse IVC中心管理(H9、9-1、9-2、9-4) 7折			
Mouse 感染室 IVC			
Mouse IVC中心管理(BH1、2、3、4、5、6/CH2、3、4)		-	
RAT IVC中心管理(H10) 7折	40元/天/cage	28元/天/cage	
RAT IVC中心管理(CH7、8、9) 7折			
RABBIT	40元/天/隻	-	
PIG	200元/天/隻	-	
無菌鼠房	自行更換300元/box/day		
	專人更換350元/box/day		

# Animal Purchase References






- National Laboratory Animal Center (NLAC)
- Jackson Laboratory
- Lescotech Biotechnology Co., Ltd.



- International Mouse Strain Resource (IMSR)



# Take home message

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**Thanks for your attention !**