List of APCF SOPs relevant to Faculty and information session

Anthony James
Director APCF
(14 & 23 Mar 2018)
APCF InfoSite - Pay it a visit!!!
## 1. Animal caring

<table>
<thead>
<tr>
<th>Topic</th>
<th>Reference 1</th>
<th>Reference 2</th>
</tr>
</thead>
</table>
| C-002 Special Observation Notifications | 1. The Guide, Veterinary Care: Clinical Care and Management. PP:113 to 114  
2. The Code of Practice P.10 (3.1.xv) and P.20 (5.23) |  |
2. The Code of Practice P.31 (6.36-6.37) |  |
| C-014 Mouse Cage Density | 1. The Guide, Environment, Housing and Management PP:56-58  
2. The Code of Practice P.31 (6.36-6.37) &  
3. The decision in the APCF User Advisory Committee Meeting (19thMarch2015). |  |
### Special Observation

**Ref#: J00419**

<table>
<thead>
<tr>
<th>Animal Health &amp; Care Issue</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td></td>
</tr>
<tr>
<td>Body Condition</td>
<td></td>
</tr>
<tr>
<td>Rectal/Gential Prolapse</td>
<td></td>
</tr>
<tr>
<td>Dermatitis</td>
<td></td>
</tr>
<tr>
<td>Wound</td>
<td></td>
</tr>
<tr>
<td>Hair loss</td>
<td></td>
</tr>
<tr>
<td>Dystocia</td>
<td></td>
</tr>
<tr>
<td>Abscess</td>
<td></td>
</tr>
<tr>
<td>Eye problem</td>
<td></td>
</tr>
<tr>
<td>Weaning issue</td>
<td></td>
</tr>
<tr>
<td>Housing issue</td>
<td></td>
</tr>
<tr>
<td>Card detail issue</td>
<td></td>
</tr>
<tr>
<td>Others:</td>
<td></td>
</tr>
</tbody>
</table>

#### Cage exceeding 1M1F with one litter will be charged at **Category III** rates.
## Euthanasia (安樂死) Request

**Ref#: 01201**

### IACUC #:

<table>
<thead>
<tr>
<th>Date:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Room:</th>
</tr>
</thead>
</table>

### APCF

<table>
<thead>
<tr>
<th>Name</th>
<th>Referee</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUANG Pingho</td>
<td></td>
</tr>
<tr>
<td>PARK Hyokun</td>
<td></td>
</tr>
<tr>
<td>Tsim Karl</td>
<td></td>
</tr>
<tr>
<td>Zhang Mingjie</td>
<td></td>
</tr>
</tbody>
</table>

### Chan Wan

<table>
<thead>
<tr>
<th>Name</th>
<th>Referee</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Nancy</td>
<td></td>
</tr>
<tr>
<td>Poon Randy</td>
<td></td>
</tr>
<tr>
<td>Wong YH</td>
<td></td>
</tr>
</tbody>
</table>

### Chau Ying

<table>
<thead>
<tr>
<th>Name</th>
<th>Referee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ko Robert</td>
<td></td>
</tr>
<tr>
<td>Qi Robert</td>
<td></td>
</tr>
<tr>
<td>Wu Zhen Ge</td>
<td></td>
</tr>
</tbody>
</table>

### Cheung Tin

<table>
<thead>
<tr>
<th>Name</th>
<th>Referee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lam Henry</td>
<td></td>
</tr>
<tr>
<td>QU Jianan</td>
<td></td>
</tr>
<tr>
<td>Xia Jun</td>
<td></td>
</tr>
</tbody>
</table>

### Chow King

<table>
<thead>
<tr>
<th>Name</th>
<th>Referee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liu Kai</td>
<td></td>
</tr>
<tr>
<td>Tang Ben</td>
<td></td>
</tr>
<tr>
<td>Xie Yong</td>
<td></td>
</tr>
</tbody>
</table>

### Ching Kenny

<table>
<thead>
<tr>
<th>Name</th>
<th>Referee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mak Ho Yi</td>
<td></td>
</tr>
<tr>
<td>Yong Peng</td>
<td></td>
</tr>
<tr>
<td>Xue Hong</td>
<td></td>
</tr>
</tbody>
</table>

### Herrup Karl

<table>
<thead>
<tr>
<th>Name</th>
<th>Referee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller Andrew</td>
<td></td>
</tr>
<tr>
<td>Tg</td>
<td></td>
</tr>
<tr>
<td>Yeung King Lun</td>
<td></td>
</tr>
</tbody>
</table>

### Animal Qty:

<table>
<thead>
<tr>
<th>Mice</th>
<th>Rat</th>
<th>Frogs</th>
<th>Others</th>
</tr>
</thead>
</table>

### Strain:

### Remarks:
## 2. Animal health

2. The Code of Practice P. 27 (6.11). |
|----------------------------------------|-------------------------------------------------------------------------------------|
| H-002 Health Monitoring and Disease Surveillance Programmes on Rodents | 1. The Guide, Surveillance, Diagnosis, Treatment & Control of Disease. PP:112-113  
2. The Code of Practice P.11 (4.1.iv), P.24 (5.47) & P.27 (6.11) |
### Special Observation

**Ref#: J00419**

<table>
<thead>
<tr>
<th>Request date:</th>
<th>Requested by:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IACUC #:**

<table>
<thead>
<tr>
<th>PI name:</th>
<th>User:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Strain and Cage #:**

<table>
<thead>
<tr>
<th>Email:</th>
<th>Phone:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Animal Health & Care Issue

<table>
<thead>
<tr>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Body Condition</td>
</tr>
<tr>
<td>Rectal/Genital Prolapse</td>
</tr>
<tr>
<td>Dermatitis</td>
</tr>
<tr>
<td>Wound</td>
</tr>
<tr>
<td>Hair loss</td>
</tr>
<tr>
<td>Dystocia</td>
</tr>
<tr>
<td>Abscess</td>
</tr>
<tr>
<td>Eye problem</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaning issue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Housing issue</td>
</tr>
<tr>
<td>Card detail issue</td>
</tr>
<tr>
<td>Others:</td>
</tr>
</tbody>
</table>

---

Cage exceeding 1M1F with one litter will be charged at Category III rates.

<table>
<thead>
<tr>
<th>Weaning issue</th>
<th>Housing issue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Card detail issue</td>
<td>Others:</td>
</tr>
</tbody>
</table>

---
Clinical records in 7H for Faculty member Anon 1 (Sept-Dec 2017)

Total cases: 46

- Death: 21
- Tooth problem: 6
- Body Wound: 4
- Eye problem: 3
- Other: 12
Clinical records in 7H for Faculty member Anon 2 (Sept-Dec2017)

Break down of clinical cases as a feature of age (>1 year old):

- All clinical incidences: 32/85
- Adult deaths: 13/18
- Eye problems: 3/6
- Body wounds: 10/15

You can see the key morbidity for your problems is being older than one year
### 3. Operation

| O-007 New APCF user training | 1. The Guide, Personnel Management: training and Education PP:15-17  
|-------------------------------|--------------------------------------------------------------------------------------------------|
| O-009 Use and Management of the Mouse Return Room (Room 7221) | 1. The Guide, Separation by Health Status and Species: PP:111-112  
The Code of Practice |
2. The Guide, Medical Management: PP:114  
3. The Code of Practice P.17 (5.12) & P.37 (7.15-7.16) |
2. The Code of Practice P.6 (2.6) & P.16 (5.2) |
4. Health and Safety

2. The Code of Practice P.35 (7.7-7.12) |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
HEALTH HAZARD
健康危害

Chronic or Serious Health Hazard
慢性或嚴重健康危害

Health Hazards Group: see back of card
健康危害組別: 請參閱卡背面資料

Agent name:

Route of Admin: see back of card

Date of final admin:

Date of cage change:

PI name:

PI contact#:

IACUC#: 34692702

Warning: Excreta/bedding/drinking bottle may be contaminated with the administered chemical. Maintain this card on cage for at least 72hrs after administration completed and until animals are transferred to a new cage.

---

Health Hazards Group
健康危害組別

May be fatal if swallowed or inhaled
吞嚥或吸人可以致命

Respiratory or skin sensitization
呼吸道或皮膚敏感受

Germ cell mutagenicity
生殖細胞致突變性

Carcinogenicity
致癌性

Reproductive toxicity
生殖毒性

Specific target organ toxicity: single exposure
特定標的器官系統毒性：單一暴露

Specific target organ toxicity: repeated exposure
特定標的器官系統毒性：重複暴露

Aspiration hazard
吸人性危害

Health hazards not otherwise mentioned
未被分類而引致健康危害物質

Route of Admin (please circle)

Oral Dose: feed / Water / IP
IM: SC / Dermal / ID
Rectal: Implant / Others:

Waste disposal subject to the conditions of Cap 354C: WASTE DISPOSAL (CHEMICAL WASTE)(GENERAL) REGULATION
### Investigating and Reporting Animal Welfare Concerns

| 2. The Code of Practice P32-33 (6.39-6.48) |
## Sample Submission Form

**Veterinarian:** Peter EBUA  
**Clinic Name & Address:** Animal & Plant Care  
**Email:** bio@e@e@.com  
**Owner Name:**  
**Animal Name:** 2017-0002  
**Sex:** Male  
**Microbiol:**  
**Species:** Mouse  
**Breed:**  
**Gender:** Male  
**Date of Birth:** 1/1/2017  
**Client name:** (blank)  
**Collection Time:**  
**Site:**  
**Total:**  

### History, Signs, Lesions:
- **Emaciated**
- **8W: 14.06g**
- **Anorexia**

### Differential Diagnosis:
1. 
2. 
3. 

### Additional Documentation Submitted:
- Clinical medical history
- In-house blood work
- Diagnostic image

### Samples Submitted:
- Blood, clotted
- Blood, EDTA
- Blood, lithium heparin
- Fluid
- Tissue, unfixed
- Tissue, fixed
- Other:

### Microbiology:
- **Complete blood count**
- **Fibrinogen**
- **Serum amyloid A**
- **Reticulocyte count (no CBC)**
- **Platelet count (only)**
- **Prothrombin time**
- **Coagulation time**
- **Cross match**
- **2+**
- **1+**
- **0+**
- **Urinalysis**
- **Urine culture**
- **Urine amino acids**
- **Urine electrolyte analysis**
- **RBC**
- **WBC**
- **Individual tests:**

### Other tests/requests:
- **WBC:**  
- **Total**  
- **ABD:**  
- **ABD:**  
- **Specific tests:** (refer to back of form)

### Results Interpretation from a Pathologist:
- **Yes**  
- **No**  

---

**Mouse 1**
Diagnosis: Brain

- Mouse 1: moderate diffuse lymphoplasmacytic meningoencephalitis with multifocal gliosis (and amyloid deposits)
  - changes not totally consistent with APP
  - suggests an infectious, possibly viral cause

- Mouse 2,3: multifocal amyloid deposits, grey matter
  - consistent with APP model
10 mice were found dead after injection with tamoxifen via the intraperitoneal (IP) route. These mice were of similar age groups, ranging from 2 to 5 months, at the time of drug administration. Necropsy on one mouse revealed foreign debris in the form of white plaques on the GIT, including stomach, intestines, liver, spleen, and mesentery. It also showed some confined bleeding on the abdominal wall and the intestine most likely caused by the injecting needle. Samples were sent to City University of Hong Kong Veterinary Diagnostic Laboratory (CityU-VDL) for histopathologic analysis. Results show that there was an acute inflammation associated with the foreign debris in the peritoneum leading to sepsis and the eventual death of the animal. The representative case was concluded as well with the other deaths and similar action plan will be implemented for this group’s future tamoxifen-related procedures.

Lesions circled (in blue) are coagulated fibrin indicative of peritonitis.
Non-compliance with APCF guidelines

Mouse cages incorrectly held in satellite lab and held there greater than 48 hours

Caused problems of odour in the laboratory

Exposure of individuals in open-plan laboratory to animal allergens
Mice kept in chemical fume hood

- Sub-optimal sash height achieved?
- Animal kept downstream of toxic organic solvent storage, e.g. xylene and alcohol (for histology)
- In APCF Animal User Manual (A mandatory reading material for all new user training)
  - 16.1. Rodents that are taken outside APCF should not be kept in the users’ laboratory overnight. All procedures, whether the animals survived or sacrificed/euthanized, must be completed very soon.
  - 16.2. Animals taken outside the facility are exposed to a higher risk of infection. These animals must not be returned to its original animal room to avoid any spread of diseases to other animals in the facility. All animals must be returned to a designated room, i.e. Room 7221 in 7J, to provide a suitable holding environment (i.e. temperature, humidity, silence, and the proper light-dark cycle) for the animals.
  - 16.4. Animals taken away from APCF should be kept in a clean, quiet, and dim place. The period of animal-keeping in the laboratory should be as short as possible. All animals should be kept away from electronic devices. Such devices, e.g. computer and fluorescent lamp, are very likely to emit ultrasound waves that rodents are sensitive to. (Note: Fume hood is obviously noisy)
Used cages with diet on the floor

- Cage on the Floor - attractive to wild rodents
Cages removed illegally from APCF – must use disposable cages
Satellite Facilities

“If animals must be maintained in a laboratory to satisfy the scientific aims of a protocol, that space should be appropriate to house and care for the animals and its use limited to the period during which it is required.”

Guide pg 134

AAALAC Interpretation:
Satellite areas should be capable of similar standards as the central animal facility – security, HVAC, OHS, light cycle control, feed storage, husbandry and sanitation, etc.
Satellite Facilities

- Potential issues....
  - Multiple user labs/ “bystander” exposure
  - HVAC function/ recirculation (engineering controls?)
  - Day-to-day care husbandry/sanitation
  - Animal transportation
  - Conflict of interest
  - Accountability and oversight
  - Scientific data validity
  - Circumventing policies and SOPs
  - Noise, chemical, light cycles, documentation, etc
The reality is that the FINAL responsibility for animal care and use rests with the ...

Dear Tony, I would just like to clarify about this email. Of course, we as users are always concern our mice health status and would try our best to check on them, I suppose the observation of food and water requirements for all mice in the facility is actually the responsibility of APCF. It is important for us to know that this is a courtesy reminder to ask users to help and make this a better facility, but these tasks remain the responsibilities of APCF. Thanks,

... USER as outlined in the Code of practice, The Guide and Harmonized Best Practice, and the NIH Guide!
Why Does This Matter?

1. HKUST’s own policy – are we following it?
2. Harmonized international best practice to coincide with our new APCF
   - Ensure humane animal care and ethical use
   - Ensure high quality, specified disease free animals
   - Ensure safe work practices
3. Trying for AAALAC accreditation at some time in the future
4. Are users familiar with BASIC guidelines of animal care and use?
5. There needs to be a culture changes at UST if we are to achieve AAALAC accreditation
1. HKUST's Own Policy:
Research Policies, Guidelines and Circulars

Policies

- Policy on Research Conduct and Integrity
- Intellectual Property Policies
- Policy on Faculty Involvement in Commercial Pursuits
- Matching Support for Large Scale Group Research Projects
- Internal Research Support Schemes
- Policy on the Establishment, Management, Reporting and Review of Research Institutes and Centers

Guidelines and Procedures

- Guidelines and Procedures for Research Practices at the University
Guidelines and Procedures for Research Practices

The University community has a collective responsibility to ensure that proper research practices are carried out in accordance with both international and University standards and regulations at all times, to be vigilant in guarding against serious lapses, and to report violations if they occur.

Committee on Research Practices

• All research conducted at the University whenever involving animals, human participants and safety should be reviewed for research practices. Under the auspices of the Committee on Research Practices (CRP), there are three Committee/ Panels to review such practices:

  • Animal Ethics Committee
  • Human Participants Research Panel
  • Safety Panel
Animal Ethics Committee

Terms of Reference
Monitor the acquisition, transport, production, housing, care use and disposal of animals;
Recommend to the institution any measures needed to ensure that the standards of the Code of Practice for Care and Use of Animals for Experimental Purposes are maintained;
Examine and approve, subject to modification, or reject written proposals relevant to the use of animals in experimental activities. Also to approve only those projects for which animals are essential and which conform to the requirements of this Code, taking into consideration ethical and welfare aspects as well as scientific value;
Formally withdraw approval for any project or authorize the treatment or euthanasia of any animal;
Examine and comment on all institutional plans and policies which may affect animal welfare;
Maintain a register of approved projects; and
Perform all other duties required by this Code.

Chair
Prof Kenny Chung, LIFS

Members
Mr. Michael Cheng, PURO
Dr. Shiu-Hon Chui (external member)
Prof. Karl Herrup, LIFS
Prof. Pingbo Huang, LIFS
Prof. Hyokeun Park, LIFS
Prof. Zilong Wen, LIFS
Dr. Chi-Kwan Yip (external member)

Member/secretary:
Mr. William Chau, APCF
I was chairing editor of this CoP, so I know the background and contents of this document – HKUST is non-Compliant with the CoP!
Harmonized international best practice to coincide with our new APCF

• Council For International Organizations Of Medical Sciences Associate Partner Of UNESCO - In Official Relations With WHO And International Council For Laboratory Animal Science (CIOMS/ICLAS): INTERNATIONAL GUIDING PRINCIPLES FOR BIOMEDICAL RESEARCH INVOLVING ANIMALS DECEMBER 2012

• The Office of Laboratory Animal Welfare (OLAW) provides guidance and interpretation of the Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals, supports educational programs, and monitors compliance with the Policy by Assured institutions and PHS funding components to ensure the humane care and use of animals in PHS-supported research, testing, and training, thereby contributing to the quality of PHS-supported activities.
Challenges and Opportunities for Harmonization
Perspectives from International Organizations International Council for Laboratory Animal Science (ICLAS)
Cecilia Carbone https://www.ncbi.nlm.nih.gov/books/NBK91511/

• ICLAS is an international nongovernmental and non-profit scientific organization that exists mainly to provide good principles to achieve good science and to promote high standards in the care of animals used in research, testing, diagnosis, and education.

• ICLAS has a strategic plan according to which it promotes worldwide harmonization in the care and use of laboratory animals.
OLAW Fast Facts
• Assured Institutions ([Domestic](#) | [Foreign](#))

Policies and Laws
• PHS Policy on Humane Care and Use of Laboratory Animals, 2015
  ([PDF - 2.95 MB](#))
• Guide for the Care and Use of Laboratory Animals, 8th Edition
  ([PDF - 1.2 MB](#))
• AVMA Guidelines for the Euthanasia of Animals: 2013 Edition
  ([PDF - 1.4 MB](#))
• International Guiding Principles for Biomedical Research Involving Animals, 2012
  ([PDF - 123 KB](#))

Guidance
• Articles by OLAW Staff and References

Education
• Education Resources

Resources
• Publications Available From OLAW
• ARENA/OLAW IACUC Guidebook, 2002 ([PDF - 3.2 MB](#)): Addendum ([PDF - 226 KB](#))
• What Investigators Need to Know about the Use of Animals ([PDF - 349 KB](#))
• Useful Links
Association for Assessment and accreditation for Laboratory Animal Care

- AALAC International is a private, non-profit organization that promotes the humane treatment of animals in science through voluntary accreditation and assessment programs.
- Nearly 1,000 companies, universities, hospitals, government agencies and other research institutions in 46 countries have earned AAALAC accreditation,
- AAALAC endorses the use of animals to advance medicine and science when there are no non-animal alternatives, and when it is done in an ethical and humane way.
- AAALAC’s a voluntary accreditation process ensures research animal care and use programs meet the minimum standards required by law, and are also going the extra step to achieve excellence in animal care and use.
- AAALAC International is where science and responsible animal care connect.
The Guide - the major reference source for a humane care and ethical use program and the compliance is the basis for AAALAC accreditation
CLIMBING THE AAALAC PYRAMID

- 40% Hardware
- 60% Software

- Sanitation
- Physical Plant
- Safety
- Sanitation of primary enclosures & animal rooms
- Institutional animal care & use committee
- Institutional animal care & use committee
- Commitment (animal care + research staff)
- Veterinary
- Occupational health
- Organizational health
- Disaster
- Program description
- Animal husbandry
- Documentation
- Animal report
- Micro-
- Institutional animal care
- Veterinary
- Institutional welfare, behaviour & social management
- Training
- Climbing the AAALAC pyramid
- Program description
- Disaster
- Documentation
- Animal report
- Micro-
- Institutional animal care
- Veterinary
- Institutional welfare, behaviour & social management
- Training
- Climbing the AAALAC pyramid
- Program description
- Disaster
- Documentation
- Animal report
- Micro-
- Institutional animal care
- Veterinary
- Institutional welfare, behaviour & social management
- Training
- Climbing the AAALAC pyramid
- Program description
- Disaster
- Documentation
- Animal report
- Micro-
- Institutional animal care
- Veterinary
- Institutional welfare, behaviour & social management
- Training
- Climbing the AAALAC pyramid
- Program description
- Disaster
- Documentation
- Animal report
- Micro-
- Institutional animal care
- Veterinary
- Institutional welfare, behaviour & social management
- Training
- Climbing the AAALAC pyramid
- Program description
- Disaster
- Documentation
- Animal report
- Micro-
- Institutional animal care
- Veterinary
- Institutional welfare, behaviour & social management
- Training
- Climbing the AAALAC pyramid
- Program description
- Disaster
- Documentation
- Animal report
- Micro-
- Institutional animal care
- Veterinary
- Institutional welfare, behaviour & social management
- Training
# LIST OF ELEMENTS FOR CLIMBING THE AAALAC PYRAMID

## HARDWARE (40%)
- **1.1** MAINTENANCE OF MACRO-ENVIRONMENT: OUTSIDE OF BUILDINGS & SURROUNDS
- **2.1** SANITATION OF MACRO-ENVIRONMENT
- **3.1** MACRO-ENVIRONMENT: HYGIENE OF NON-ANIMAL ROOMS AND CORRIDORS
- **4.1** PHYSICAL PLANT

## SOFTWARE (60%)
- **1.1** PROGRAM DESCRIPTION
- **2.1** INSTITUTIONAL ANIMAL CARE AND USE COMMITTEE
- **2.2** WELFARE BEHAVIOR & SOCIAL MANAGEMENT FOR THE ANIMALS
- **2.3** TRAINING OF CARERS, USERS & IACUC MEMBERS
- **2.4** OCCUPATIONAL HEALTH & SAFETY FOR EVERYONE
- **3.1** HUSBANDRY
- **3.2** SANITATION OF PRIMARY ENCLOSURES & ANIMAL ROOMS
- **3.3** MICRO-ENVIRONMENT: CONDITIONS FOR ANIMALS HELD IN SATELLITE FACILITIES
  - QUALITY OF ANIMAL ROOMS & PRIMARY ENCLOSURES E.G. NESTING & ENVIRONMENTAL NRICHMENT
- **4.1** THE ROLE OF THE INSTITUTIONAL OFFICIAL: AUTHORITY & RESPONSIBILITY
- **4.2** ORGANIZATIONAL STRUCTURE
- **5.1** VETERINARY CARE
- **6.1** COMMITMENT: ANIMAL CARERS TO HUMANELY CARE FOR ANIMALS / RESEARCHERS
  - MUST TAKE ULTIMATE ETHICAL RESPONSIBILITY FOR THEIR ANIMALS
The AAALAC platform – a balanced and stable foundation for a humane care and ethical use program supported by the IO - AV - IACUC
The press is always willing to publish scandalous news - any adverse news about HKUST research animals is going to hurt UST’s reputation & …
... DoH does not like to be embarrassed!
Details of the HKUST Health Monitoring, Disease Surveillance and Adverse Event Investigations

Anthony James
BVSc (Hons) MSci MANZCVS MRCVS
Director of APCF HKUST
Why Define Health Status of Research Animals?


- Preamble: Defining the health status of animals used in research is key to the reliable interpretation of results obtained from experiments involving the use of animals, and in obtaining reproducible experimental results. Microbiological standardisation has reduced the numbers of animals used by reducing the variation within and between test groups. It has also improved the overall health of laboratory animals, thus improving their welfare, and has reduced human health risks due to zoonotic disease.
1 Preamble

Monitoring of laboratory animal breeding and experimental colonies, with the intention of harmonizing procedures primarily among countries associated with FELASA, but also worldwide.

The use of the recommendations will be facilitated by a basic knowledge of microbiological standardization and diseases of laboratory animals.
2 General considerations

- These recommendations constitute a common approach for health monitoring of laboratory animals and the reporting of results. Actual practice may differ from these recommendations in various ways depending on local circumstances, such as research objectives and local prevalence of specific agents.

- Health monitoring schemes must be tailored to individual and local needs. However, quality aims must be clearly defined and an appropriate system of preventive hygienic measures (e.g. barrier systems) developed to meet those aims.

- Finally, a health monitoring programme should be established in every facility to demonstrate whether the quality aims have been met by monitoring the effectiveness of the preventive measures.
3 Risk of introducing unwanted microorganisms

The risk of inadvertently introducing microorganisms (viruses, bacteria, fungi and parasites) into breeding units is generally lower than for experimental units. Introduction of unwanted microorganisms is mainly due to one or more of the following factors:

- animals,
- biological materials,
- equipment and
- staff
4 Frequency of monitoring and sample size

- Colonies should be monitored at least quarterly.
- Depending on local circumstances and needs, more frequent monitoring may be carried out for a selection of some frequently occurring agents that have a serious impact on research.
- Sick and dead animals should be submitted for necropsy. These animals should be examined...
- ...in addition to those already scheduled for routine monitoring.
- The outcome of the necropsy may prompt an increase in the sample size and frequency of monitoring.
Table 1 Calculation of the number of animals to be monitored

Diseases with an infection rate of 50% or more (Sendai, MHV) require far fewer animals to detect their presence than diseases with low infection rates.

Assumptions

1. Both sexes are infected at the same rate
2. Population size > 100 animals
3. Random sampling
4. Random distribution of infection

The sample size is calculated from the following formula:

$$\frac{\log 0.05}{\log N} = \text{Sample size}$$

$N =$ percentage of non-infected animals
0.05 = 95% confidence level

Relation of sample size to prevalence rate

<table>
<thead>
<tr>
<th>Suspected prevalence rate (%)</th>
<th>Sample sizes at different confidence levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>95%</td>
</tr>
<tr>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>50</td>
<td>5</td>
</tr>
</tbody>
</table>

Example: 10 animals should be monitored to detect at least one positive animal if the suspected prevalence rate of an infection is 30% (confidence level: 95%)

*Laboratory Animals* (2002) 36
Herd Health Management

- defined as ‘a method to optimise health, welfare and production in a population of ... [animals] ... through the systematic analysis of relevant data and through regular objective observations of the ... [animals] ... and their environment, such that informed, timely decisions are made to adjust and improve ... [colony] ... management over time'.

- [https://www.nottingham.ac.uk/research/groups/dairy-herd-health-group/herd-health.aspx](https://www.nottingham.ac.uk/research/groups/dairy-herd-health-group/herd-health.aspx)
Conceptual foundations for infectious disease surveillance

- The purpose of this report is to offer concepts for consideration in developing infectious disease surveillance systems, defined here as active, formal, and systematic processes intentionally directed to rapidly seek out and identify infectious disease agents or disease.

Adverse events at research facilities

- Identifying the various events that can endanger animal and human lives and lead to loss and damage of property is essential in planning efficient measures for prevention and mitigation. Categorizing the possible events into groups based on their effects can help in coordinating and managing efforts to prevent and/or reduce the impact of such events.

- Swapna Mohan, Lori L Hampton & Susan Brust Silk
HKUST – The Questions

It is not just the organisms but the objectives of the programme.

- What are you trying to exclude and why?
- What will you do if you get a positive?
- What are our resources and how best to employ them.
- What are our risks - imports and/or closed colonies?
- What are your colony units - IVC cages or open cage rooms?
- Are we going using sentinels or EA dust?
- Are we going to use sentinels or live sampling?
Risk-Analysis Programme

- How are our room(s) HVACs configured:
  - Pressure differentials?
- Wild rodents
- User compliance
- Institutional support
The key is...

...These things determine our frequency of sampling and how I sample?

NO COOK-BOOK RECIPES
HKUST Circumstances

- we import animals almost monthly from a range of the sources and so the approved supplier concept is flawed.
  (Should I treat the 4 main commercial suppliers the same way as universities and other sources?)

- We determine a colony as low risk or high risk.
  - Based on our assessment of the health report and the quality of the laboratory
We do sampling of all imports

- If over a 100 animals we sample on an assumption of 30% prevalence for the 6 most prevalent organisms, on the assumption of common things commonly.
- We do live testing:
  - 5 animals per swab of the fur and 5 faecal pellets 4 days after arrival.
- Once the results are back (usually 10 to 14 days) the animals that are low risk go to the PI.
- For those sources we consider high risk, we keep the animals isolated for a further 4 weeks
  - repeat testing using a comprehensive panel of serology looking for seroconversion using the blood spot model (2 animals per filter paper)
Finally the programme is meaningless unless...

- You monitor your facilities’ sanitation programme,
- You monitor your facilities’ autoclave,
- Your users’ compliance with SOPs
- Your users’ use of biologicals
- You have disease surveillance of colonies
- You have Adverse Event Reporting (and PAM)
  - We have a gross pathology programme with City U’s vet school’s path labs
Weaknesses at HKUST:

- Biologicals
  - No users are having their cell lines tested
- Environmental monitoring
  - Just getting started
- User compliance and cooperation
  - Efforts to accept results from sources and laboratories of uncertain/unreported quality standards
- Bacteriology – really nothing meaningful to date
  - Cost of bacteriology to test for the FELASA list of organisms
  - Problematic shipping of bacto samples overseas
  - I don’t know what is important because researchers don’t involve APCF in research design
Conclusion: HKUST has no excuse for not being compliant with its own policy. Its humane care and ethical use is far from stable and balanced. As a consequence it does not sit well with international best practices as outlined in the major reference documents discussed today.
Questions