Understanding the Process Underlying the use of Animals for Research and Teaching

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Use of Animals for Research in Canada

- **In Canada, Institutional and Industry use of Animals for Research, Teaching & Testing falls under the guidelines of:**

Canadian Council on Animal Care
Conseil canadien de protection des animaux
www.ccac.ca

- **CCAC, established in 1968, is a federally funded, national organization, based in Ottawa, and responsible for setting and maintaining standards for the care and use of animals.**

- **"Memorandum of Understanding" between CCAC and Funding Agencies requires that funded research that involves the use of animals be conducted in accordance with CCAC guidelines.**

- **Scientific journals often require evidence of "approval of animal use" for acceptance of manuscripts that involve the use of animals.**

- **"Non-compliance" with CCAC guidelines has serious implications for the institutions and individuals involved.**

CCAC programmes

- **Assessment Program (for compliance /Non Compliance)**

- **Guidelines Program**
  - **Policy statements & documents to assist institutions with development of Animal Use programmes**
  - **Documentation of CCAC Guidelines**
  - **Panel Assessment Policy; Compliance & Non Compliance Policy**
  - **Publications:** *"CCAC Guide to the Care and Use of Experimental Animals,* **Vol. 1, 2nd Edn., 1993; Vol. 2, 1984 (species-by-species)**

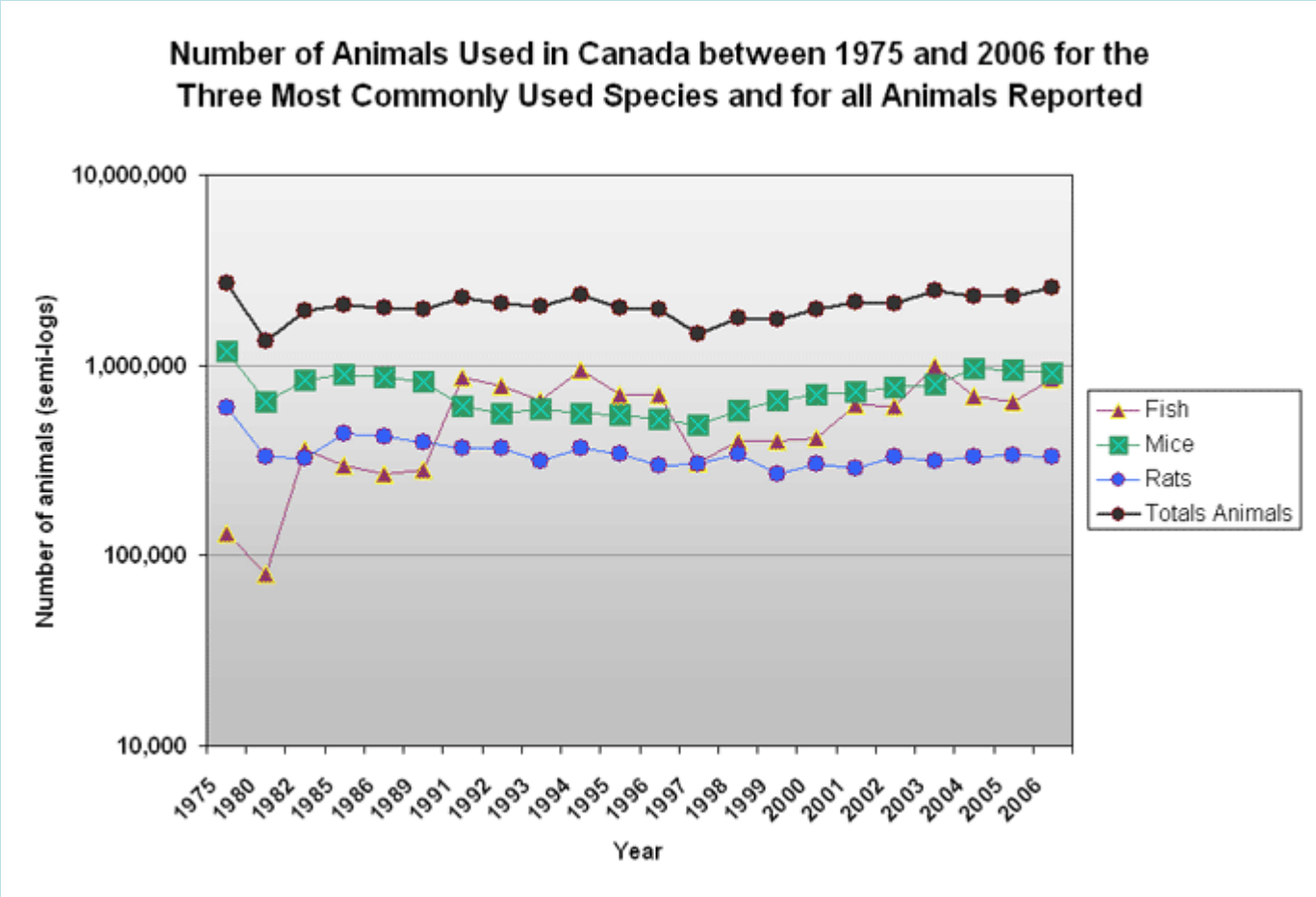
- **Education, Training & Communications**
  - **Training modules and information on relevant courses**

CCAC ASSESSMENT Programme

- **Institutional Site Visits** (~ 3yr intervals); CCAC evaluates:
  - Animal Use Protocols (AUPs) approval process
  - Post approval systems for monitoring of AUPs
  - Quality of Animal facilities (e.g.):
    - » Ventilation, surfaces, sanitation; special facilities (e.g. surgery areas);
    - » Security and Safety (fire and hazards to personnel and animals).
  - Animal Care
    - » Food & water; environmental enrichment; Space; species separation;
    - » Biosafety; health monitoring and record keeping;
  - Veterinary Care (quarantine; disease control)
  - Standard Operating procedures (for animal care & facility use)
- **Institutional animal use data**
- **"Good Practices" Certificate for institutions with "Compliance or "Conditional Compliance"**

GAP - Good Animal Practice® in Science
Bonnes pratiques animales - BPA[MD] en science

Trends in Scientific Usage of Animals in Canada



CCAC 2006 Report

Principles Guiding the of Animal Use

"Animal": vertebrates and cephalopods (mollusc)

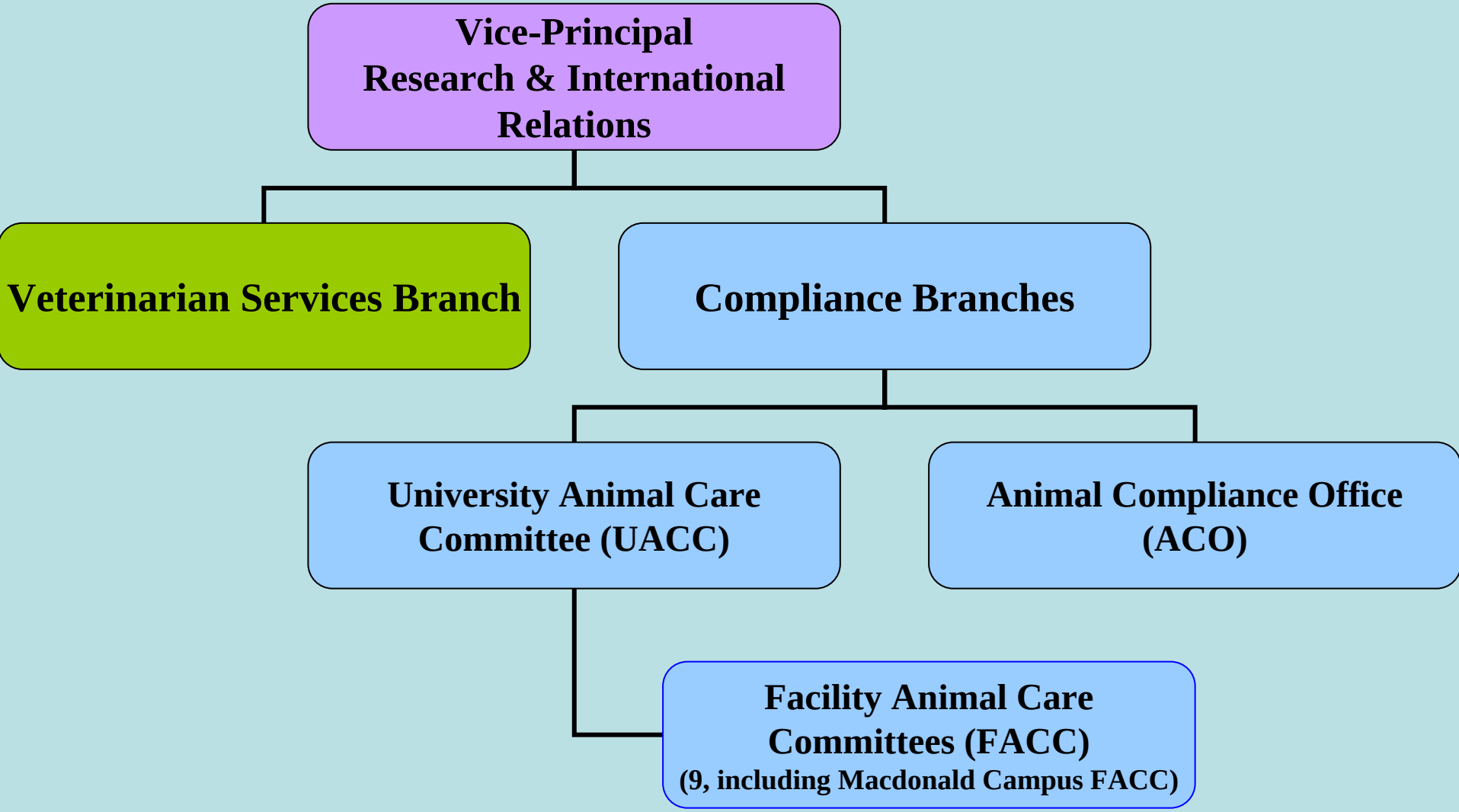
- **Appropriate facilities with high standards of animal care and facility management**
- **Ethical, Scientific/Pedagogical review**
- **Theory and Practical training for all personnel**
- **The Three Rs Alternatives**

“Three Rs” Alternatives

Public concern for pain and distress in research animals led, in1959, to publication Russell and Burch “Three Rs Alternatives”:

- ***Replacement:***
  - **use of an inanimate system (e.g., a computer model)**
- ***Reduction:***
  - **Decrease in number of animals used previously with no loss of useful information.**
  - **Use of proper statistical tools for experimental design and “power test”.**
- **Refinement:**
  - **a change in some aspect of the experiment resulting in a reduction or replacement of animals, or in a reduction of any pain, stress or distress to the animals.**
  - **Establishment of early <u>“endpoints”</u> for intervention in a study.**

McGill Organization Structure for Animal Care



Macdonald Campus FACC

- **Evaluates & Approves AUPs:**
  - **all research/ teaching AUPs in FAES;**
  - **all McGill teaching/research AUPs involving <u>Field Studies;</u>**
- **Conducts Annual site visits and monitors Macdonald Campus Animal facilities.**
- **FACC membership:**
  - **University Veterinarian; University Research Ethics Officer;**
  - **Animal research professor (2); professor-non-animal user;**
  - **Graduate student;**
  - **Facility managers (2);**
  - **Community Representative**
  - **Chair (Dr. Leroy Phillip)**
  - **FACC coordinator**

McGill's "Policy on Animal Study and Care"

VPIR statement to the Community : (on VPIR website)

"McGill regards the use of animals in research and teaching to be an integral component of continued progress in certain areas or science, education and agriculture.The use of healthy, well cared for animals has been essential for advances in the life sciences, medicine, and agriculture and has resulted in enormous benefits for human and animal health".

Policy Statement:

McGill University is committed to conducting the highest-quality research and to providing animals with the best care. At McGill University, all research, teaching and testing involving animals is guided by the Russell-Burch tenet of Replacement, Reduction and Refinement. A rigorous review by ACCs ensures that animals are used only when necessary and under humane conditions.

Policy Components: based on 12 key principles:

a) Responsibility:

- *All individuals involved in the oversight, care and use of animals have a <u>responsibility …. for the proper stewardship of the animals</u> under their care;*

b) Use of Animals in Research, Teaching and Testing

- *Application must be described in an <u>Animal Use Protocol (AUP)</u>*

c) Monitoring the Care and Use of Animals:

- *Roles of: VPIR, ACO, UACC, FACCs; all have "terms of reference" and mandates.*

d) Animal Care & Veterinary Care Programs; (the environment & management practices must promote the wellbeing of the animals)

e) Education & Training; f) Occupational Health Program (for personnel exposed to animals, tissues etc.)

g) Physical Facilities; Facility Managers (all housing & facilities will be conducive to the wellbeing and safety of the animals)

h) Record keeping; i) Procedure for Reporting of Policy Violations.

- **Information Animal use and care can be found at:**

www.mcgill.ca/researchoffice/compliance/animal/
www.mcgill.ca/macdonald/research/compliance/animal

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Key Elements of the Animal Use Policy

1.The Animal Use Protocol (AUP)

- **Form document requesting use of animals for research/ teaching**
- **Available on the Animal Care website (www.mcgill.ca/macdonald/research/compliance/animal)**
- **Form types: New/Renewal (full); Short Renewal; Amendment**

- **PIs (only professors or facility managers; not students) submit AUP in compliance with CCAC & McGill guidelines;**

- **Will be approved by the FACC before animals are purchased and used;**

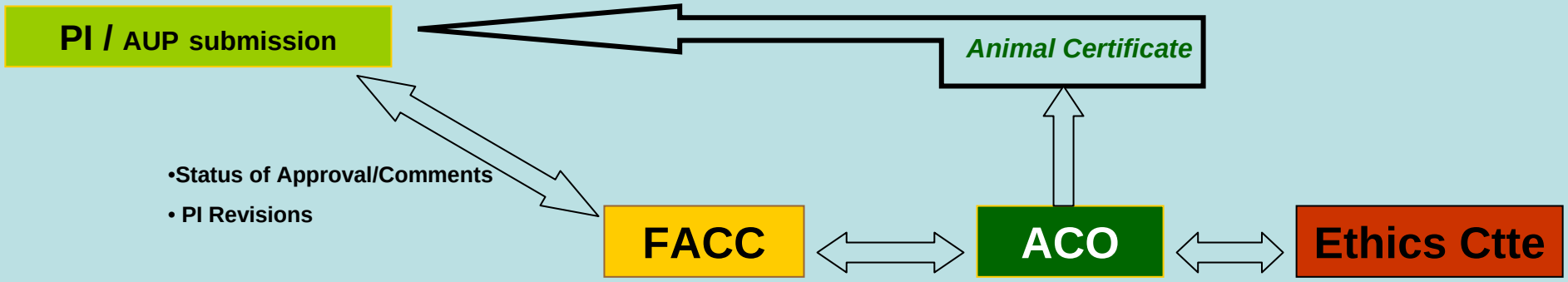
- **Will be peer-reviewed for scientific or pedagogical merit;**

- **Evaluation is based on CCAC & McGill guidelines with focus on the following criteria:**
  - ***Project Objectives & justification for use of animals;***
  - ***Husbandry, care and welfare of animals;***
  - ***Procedures to which animals will be subjected ;***
  - ***Pain and discomfort to animals***
  - ***Hazards to personnel and animals (safety to personnel and animals)***

- **AUP Categories of invasiveness: B, C, D, E (severe pain; not permitted at McGill)**

- **The AUP will be performed in a facility which ensures the safety of the staff and students, while maintaining the health and welfare of animals through high standards of animal care and facility management.**

AUP Approval: Key Players



The AUP Approval Process

- PI submits electronic and print versions of AUP to FACC Chair;
- FACC meets monthly (except August) to review AUPs;

- Research Office manages scientific peer review of projects not already peer reviewed by the funding agency;

- Chair sends "Status of Approval" letter and FACC comments s to PI;
- PI addresses comments, if required, submits revised AUP;
- Chair submits FACC-approved AUP to ACO for final approval; (pending verification of training, funding sources etc.);

- Teaching AUPs & "D" level research AUPs are subject to approval by UACC Ethics Subcommittee;
- PIs must receive stamped "certificate" before initiating research
- The Animal Certificate must be posted in the room use for he AUP

- An AUP Amendment is needed to add personnel or animals, or to change procedures.
- AUPs must be RENEWED annually; full RENEWAL after 2 years

2. Personnel Responsibilities

- **The PI and signatories to an AUP have shared responsibility for conducting the research or teaching in accordance with CCAC and McGill guidelines.**

- **PIs have responsibilities of:**
  - **requesting to use only those animals that are absolutely necessary to the research or teaching goals;**
  - **providing clear and complete written information on any instance of proposed animal use, or modified animal use, to their local FACC for approval before any animals are ordered or used.**
  - **ensuring that he/she, and the team, follows the protocol as approved, along with any conditions specified by the FACC;**
  - **ensuring that any animal health and welfare concerns are promptly reported to the animal care and veterinary services;**
  - **ensuring that any protocol deviations/difficulties are reported to the FACC.**

Personnel Responsibilities…(cont'd)

(re: Canadian Food Inspection Agency)

- **Investigators are responsible for complying with CFIA regulations concerning feeds, biologicals and drugs for livestock animals destined for the food supply.**

- **PIs must consult with CFIA's Schedule IV or V, list of approved veterinary biologics, Compendium of Medicating Ingredient Brochures, and/or obtain a Research Exemption or Safety Assessment from CFIA at: www.inspection.gc.ca.**

3. Compulsory Training

- **All faculty, postdoctoral fellows, graduate and undergraduate students, research personnel, veterinarians, and staff members will have adequate training and experience before initiating a protocol, undertaking new procedures, and using or caring for new species.**

- **Courses:**
  - **On-line course (multiple choice test)**
  - **Basic and Advanced levels**
  - **Practical training by certified trainers**

- **Certificate for each species is valid for 5 years across Canada**

4. Occupational Health Issues

- **Biohazard Certificate:**
  - **required for the use of hazardous agents:**
    - **radioactive materials, recombinant DNA/RNA, viral vectors**
    - **human/animal/plant pathogens, acute toxins, chemical carcinogens**
  - **must be obtained from Environmental Health & Safety Office (EHS)**

- **MSDS (Material Safety Data sheet)**
  - **provides useful information on hazardous materials for use in Section 12 of AUP.**
  - **attaching an MSDS sheet to the AUP may be helpful**
  - **the EHS website provides links to MSDS data bases**

- **Occupational health & Zoonotic diseases:**
  - **registration in programme is voluntary, but mandatory for personnel working with non-human primates;**
  - **Registrants are placed in contact with a physician for risk assessment and medical treatment.**
  - **There is no cost for participation in the pprogramme**

- **For more Information, see:**

www.mcgill.ca/researchoffice/compliance/animal/occupational/

5. Monitoring & Ensuring Animal Health

A. Post-Approval Monitoring

- Ongoing veterinary supervision
- Early identification of potential problems

B. Environmental Enrichment

- Helps prevent psychological & behavioural problems that may affect results of the research project

- The main factors to keep in mind are:
  - study design
  - type of housing;
  - social contact with same species,
  - feeding; enrichment devices
  - human interaction.

Macdonald Animal Facilities

- **SARU: Small Animal Research unit**
  - For laboratory animals;
  - Recently renovated;
  - equipped with surgery and BSL-2 animal room
  - Director: Dr. M. Rau; Facility Manager: G. Bingham
- **LARU: Large Animal Research Unit**
  - Pigs; sheep;
  - Equipped with large animal surgery
  - Director: Dr. V. Bordignon
- **ASSC: Avian Sciences and Conservation Centre**
  - Research with endangered species of birds
  - Director : Dr. D. Bird; Facility Manager: I. Ritchie
- **Macdonald Campus Farm:**
  - Cattle Complex; Swine Unit; Poultry Complex
  - Farm Manager (acting) : P. Meldrum

SARU Animal Facility

- **Recently renovated: with improved ventilation**
- **New surgical facility**
- **6 animal rooms,**
- **2 procedure rooms**
- **Level 2 biosafety room;**
- **Feed storage room**
- **Cage washer Room**

Large Animal Research Unit (LARU)

- For intensive research in reproductive & molecular biology and parasitology nutrition
- Labs, 3 animal holding rooms with individual pens (pigs, sheep, goats)

Distinctive feature : LARGE ANIMAL SURGERY; Transgenic animal models

HVAC Unit

- Computerized control
- 100% fresh air; Preheated/cooled; pre-filtered
- Fan drives air through duct
- 12 air changes /hr (525 CFM) in surgical facility


Operating room
• HVAC control
• Stainless steel gas exhaust pipe

Ensuring Compliance

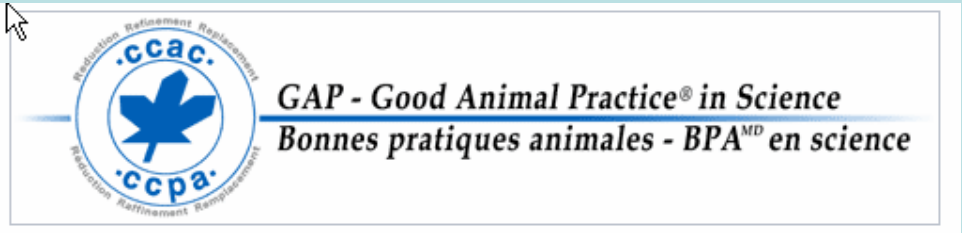
- **The UACC, FACC, Veterinary Services and the ACO have the right to access areas where animals are housed or used at all times;**

- **They must have access to information directly related to the health and welfare of animals and to procedures conducted on animals.**

- **The UACC, FACC or the Director of ACO <u>can suspend any activity</u> involving animals if it does not comply with the approved AUP, or with applicable laws, regulations, policies and guidelines.**

- **While collegial work is strongly encouraged to resolve concerns, there will be clear consequences for any significant breaches of compliance.**

- **McGill has this:** →



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Thank YOU!!