Hello, and welcome to our presentation - introduction to the USF IACUC.

I’m Andy Mackley, the IACUC administrator at here at USF.

Today we’ll introduce you to what an IACUC is - why they were created - and what they do.
What is an IACUC?

Institutional Animal Care and Use Committee

This is an introductory presentation, so let’s begin by defining IACUC. IACUC is an acronym for Institutional Animals Care and Use Committee. The IACUC is a statutory requirement of the Animal Welfare Act and Public Health Service policies. It is a committee of research scientists, veterinarians, and members of the community, with oversight of vertebrate animal research conducted by the institution they serve.
Enacted in 1966, the Animal Welfare Act is series of laws regulating animal use activities, to ensure that animals intended for use in research facilities are provided humane care and treatment. The Animal Welfare Regulations (AWR) provide more detail as to the care and use of regulated animals.

The act covers warm-blooded vertebrates, except lab mice (Mus), lab rats (Rattus), birds bred-for-research, and farm animals and horses not used in biomedical research.

It requires adequate veterinary care, and registers animal dealers, exhibitors, carriers, and research facilities.

The AWA/AWR is enforced by the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS).
What Does the IACUC Do?

As a statutory requirement of the AWA, the IACUC is mandated to:

- Ensure the humane care and use of vertebrate animals used in research, teaching and testing and compliance with guidelines and regulations.
- Oversee and evaluate the institution’s program for animal care and use including its procedures and facilities.

The IACUC is a statutory requirement of the Animal Welfare Act and Public Health Service policies. It is tasked with ensuring the humane care and use of vertebrate animals in research, teaching, and testing, and compliance with applicable guidelines and regulations. The committee has oversight over the entire animal care and use program, including both procedures and facilities.
<table>
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<tr>
<th>IACUC Program</th>
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<td>• Made up of the IACUC and support staff</td>
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<td>• Provides oversight of research activities involving animals</td>
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<td>• Protocol review</td>
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<td>• Modification review</td>
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<td>• Annual continuing review</td>
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<td>• Conducts semi-annual facility and program inspections</td>
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<td>• Semi-annual inspection includes a facility review or a physical inspection of all buildings, rooms, laboratories, enclosures used for animal experiments, confinement, transport, maintenance, or breeding</td>
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<td>• Facilitates compliance of animal research activities with federal regulations and guidelines (e.g., OLAW, USDA and AAALAC)</td>
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<td>• Performs investigations of allegations of non-compliance</td>
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<td>• Provides IACUC education and training courses</td>
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The IACUC Program provides oversight of all animal research activities at the institution.

The research is monitored through:
- the review of protocols,
- semiannual facility inspections,
- facilitation of compliance with federal regulations and guidelines,
- and investigation of allegations of non-compliance.

The IACUC also provides training and education and facilitates hands on training with comparative medicine.
USF IACUC Member Composition

- Institutional Official:
  - Keith Anderson, Interim Vice President for Research, Innovation & Knowledge Enterprise
- IACUC Chair/Vice Chair
  - Jay Dean, Ph.D., Molecular Pharmacology and Physiology
  - Shari Pilon-Thomas, Ph.D., Moffitt Cancer Center
- 11 members, plus pool alternates (quorum = 6)
- 2 voting veterinarians
- 1 or more faculty from each College/Affiliate- e.g., VA and Moffitt
- 1 non-scientist who also serves as community representative (not USF affiliated)
- 1 member with expertise in field or wildlife studies

The composition of the IACUC is defined in the Animal Welfare Act.

USF has designated an Institutional Official, Keith Anderson, with overall responsibility for the animal program, and in accordance with USDA and PHS guidelines, he has appointed the members of the IACUC.

The USF IACUC membership includes 11 regular voting members and 14 alternate members who stand in for regular voting members as needed.

The IACUC is chaired by chairperson, Jay Dean (scientist), and vice-chairperson, Shari Pilon-Thomas (scientist).

The committee consists of
- two laboratory animal veterinarians,
- eight animal research scientists,
- one scientist with expertise in field and wildlife studies,
- and one community representative who is both a non-scientist and non-affiliated member.
As required by federal regulations, no more than three members are part of any one administrative unit.
What are the IACUC’s Responsibilities

- Review, at least semiannually, the institution’s program and animal facilities (including satellite facilities); for the humane care and use of animals
- Provide reports of those reviews to the Institutional Official (IO)
- Review animal care, welfare concerns
- Make recommendations to the IO on any aspect of the animal program, facilities, or personnel training
- Review and approve, require modifications or withhold approval, of proposed animal activities
- Review and approve, require modifications or withhold approval, of proposed significant changes to the use of animals in ongoing activities
- Be authorized to suspend an activity involving animals

The IACUC is tasked with ensuring the humane care and use of vertebrate animals used in research at USF.

As part of that assignment, the IACUC:

- Performs a semiannual review of all animal facilities, including housing facilities, as well as animal facilities operated by comparative medicine and report the findings to the Institution Official.

- Reviews all proposed animal research activities and modifications to approved research activities.

- Reviews and investigates any animal care, or animal welfare concerns and any allegations of non-compliance; the IACUC is authorized to suspend any animal research activities as necessary.

- Makes recommendations to the IO on any aspect of the animal program, facilities, or training.
The 3 Rs IACUC Principles

• **Reduction**
  • Appropriate species & minimum number required to obtain valid results

• **Refinement**
  • Avoid or minimize discomfort, distress & pain

• **Replacement**
  • Use non-animal models when possible; mathematical models, computer simulation, in-vitro biological systems, videotapes

The 3 Rs principle was launched in the early 1960s by two English biologists, Russel and Burch in their book “The Principle of Humane Experimental Technique”.

**The 3 Rs** stand for Replacement, Reduction and Refinement.

**Replacement alternatives** refer to methods which avoid or replace the use of animals. This includes both absolute replacements (i.e. replacing animals by computer models) and relative replacements (i.e. replacing vertebrates, with animals having a lower potential for pain perception, such as some invertebrates).

**Reduction alternatives** refer to any strategy that will result in fewer animals being used to obtain sufficient data to answer the research question, or in maximizing the information obtained per animal and thus potentially limiting or avoiding the subsequent use of additional animals, without compromising animal welfare.

**Refinement alternatives** refer to the modification of husbandry or experimental procedures to minimize pain and distress, and to enhance the welfare of an animal used in science from the time it is born until its death.
The IACUC has purview over any research involving live vertebrate animals.

USDA regulations cover the use of some animals, including, but not limited to, non-human primates, dogs, cats, rabbits, guinea pigs, hamsters, pigs, sheep, goats, cattle and horses.

The PHS policy, enforced by the Office of Laboratory Animal Welfare (OLAW), covers the use of reptiles, amphibians, fish, and purpose bred rats and mice.

Additionally, the PHS policy requires that field studies, research conducted on free-living wild animals in their natural habitat, be reviewed and approved by the IACUC.

The USF IACUC is responsible for reviewing all research or teaching involving live vertebrate animals, conducted at USF or affiliate institutions, and field studies conducted by USF or affiliate faculty and staff, or that use USF funds.
IACUC Protocol Applications

- The IACUC meets monthly
- Veterinarians pre-review all applications
- The IACUC must review and approve all applications prior to the start of the research
- **New Research** protocols require a Full Committee Review (FCR)
- The following applications are reviewed through Designated Member Review (DMR)
  - Renewals of research protocols previously approved by this IACUC (3rd Year Renewal)
  - Research protocols only involving animals in Pain Category A (USDA Category C)
  - Protocols for the study of Wild Animals in or from Natural Settings
  - Breeding colony protocols
  - Animal Tissue Use Only protocols
  - Antiserum Production protocols

All proposed research with live vertebrate animals must be reviewed and approved by the IACUC prior to beginning the research.

And all proposed research applications must be pre-reviewed by veterinary staff before proceeding to IACUC review.

The USF IACUC has two distinct processes to review and approve proposed animal research, Full Committee Review (FCR) and Designated Member Review (DMR).

Full Committee Review (FCR) takes place at a convened IACUC meeting where the application is reviewed by the entire committee and a determination is voted on by a quorum of members attending the meeting. Studies reviewed by Full Committee can be Approved, found to Require Modification to Secure Approval, abbreviated RMSA, or disapproved. RMSA studies either return to Full Committee for approval (RMSA-FCR), or are delegated to the primary reviewer from the meeting to confirm that the modifications were adequate for approval (RMSA-DMR).

Only a small number of studies are reviewed by Full Committee, the only studies required to undergo Full Committee Review are Research or Teaching applications which have not been previously approved by this committee. The majority of applications are reviewed via
an expedited approval process, called Designated Member Review.

Designated Member Review (DMR) is an expedited review process wherein all IACUC members are afforded three days to examine submitted studies. After the review period, if no member has reason to recommend the study for full committee review, it is assigned to a designated member for review and approval, where the Designated Member provides a determination on behalf of the entire IACUC. The Designated Member Reviewer may Approve the study, Require Modification to Secure Approval, or recommend for Full Committee Review. They cannot disapprove an application; disapproval can only occur at a convened IACUC meeting.

Most studies are processed via DMR, including Research or Teaching applications which have been previously approved by this committee (3-year renewal applications), studies with animals only in pain category A (Category A applications), protocols for the study of wild animals in or from natural settings (Wildlife applications), Breeding protocols, Antiserum Production Protocols, and Animal Tissue Use Only protocols.
IACUC Meetings

- IACUC meets monthly; scheduled in advance
  - 4th Friday each month (except May, Nov, Dec) at Noon (lunch provided)
- Quorum of members required (quorum = 6)
- eIACUC Application due 7 days prior to IACUC meeting
- Pre-review by veterinarian required prior to IACUC review
- IACUC Determinations
  - Approve (as is)
  - Requires Modifications to Secure Approval
  - Disapproved

The IACUC meets once per month, usually on the 4th Friday of the month, but sometimes sooner due to holidays. The IACUC meeting schedule is posted on the Research Integrity and Compliance webpage under COMMITTEES & MEETING SCHEDULES.

The IACUC conducts a variety of business at the monthly meeting, which may include:
- review and approval of IACUC applications and modifications,
- review of policy changes,
- investigation of non-compliance events,
- and receiving and approving reports, such as semiannual reports and VA triennial audits.

Applications reviewed at meetings can be:
- Approved,
- or Approved pending modifications, we call that Requires Modification to Secure Approval or RMSA for short
- or Disapproved.
IACUC Submissions for Review

• Applications for Research Compliance (ARC)
  • Electronic Submission System for applications requiring IACUC approval
  • Individuals must register for access to the system
  • Training is available for new users
  • Visit https://arc.research.usf.edu/prod for additional information

All IACUC studies, except a very small number of Veterans Administration research protocols, are submitted and processed online through our Applications for Research Compliance (ARC) system. Our online electronic protocol management platform, the eIACUC, is located on the ARC system. In order to access the system individuals must first register with the ARC system, and once access is granted they can utilize the eIACUC.

The eIACUC system is conveniently accessed online from anywhere in the world with an internet connection. While most find it easy to use, training is available for beginning users who may experience a learning curve.

To register, log-in or find training please visit the ARC homepage. (https://arc.research.usf.edu/prod)
## Protocol Components

- Investigator provides justification for use of animals - that the use of animals is necessary to answer a scientific question
- Investigator has considered alternatives - mathematical models, computer simulation, in-vitro biological systems, etc.
- Proposed activities are not unnecessarily duplicative – an appropriate literature search has been conducted
- Procedures avoid or minimize discomfort, distress, and pain - procedures that may cause pain or distress will incorporate pain-relieving measures unless well justified
- Appropriate surgical techniques are described
- Appropriate methods of euthanization are described
- All personnel are IACUC certified - current and appropriate training
- Include veterinary involvement in planning (pre-review)

In an application the Primary Investigator (PI) must:

- Provide justification for the animal use
- Demonstrate that alternatives to animal use have been considered
- Provide assurance that the work is not unnecessarily duplicative
- Assure that procedures to avoid or minimize discomfort, distress, and pain are used, unless it is not possible and that it is well justified
- Appropriate surgical techniques and euthanasia methods are described
- Ensure that all personnel are properly trained and certified as necessary
- And that veterinarians were involved in the planning for the study, which is covered by the veterinary pre-review.
Personnel Training and Experience

- Personnel must be trained so that they are qualified to perform research on animals-IACUC member reviews training as part of protocol review
- Annual opportunity to update researcher profile
- Six-year recertification requirement with new Health and Risk Assessment and AALAS training

All personnel working with live vertebrate animals must be properly trained. Anyone listed on an IACUC study, except as a secondary study contact, must complete all required training and receive IACUC certification before the study can be approved.

Once certified researchers are encouraged to update their profile every year and must be re-certified every six years.
**IACUC Certification-Training**

- Basic IACUC certification will allow an individual to be listed on an IACUC study and requires following items:
  - Indication of Animal Experience (a CV and list of years of experience by species)
  - Health and Risk Assessment
  - Facility Orientation or Wildlife Research Orientation
  - AALAS Online Training Completion: Laws, Regulations, Policy and the Guide
  - Rodent Biomethodologies on-line and wet lab training (all non-PI researchers)

- Additional training is required for:
  - Survival Surgical Procedures (PI and any staff performing surgery)
  - Physical methods of euthanasia (all persons performing survival surgeries)
  - Working with immune compromised animals

Basic IACUC certification requires online and hands on training, as well as uploading a few documents, including:
- a CV,
- A personal health and risk assessment,
- An online training certificate
- And a Facility Orientation certificate, or Wildlife Research Orientation certificate for wildlife studies.

Additionally, a hands-on wet lab training is required for all non-PI researchers, except for Wildlife researchers, who receive training from the study PI.

Persons performing survival surgical procedures, physical methods of euthanasia, and working with immune compromised animals, must complete additional training.
Classification of Pain Categories in Research

USDA Category C = USF Category A
• = momentary pain or distress
  • Needle Stick for blood draw
  • Administration of euthanasia
  • No anesthesia needed for a similar procedure in a human

USDA Category D = USF Category B
• = pain/distress, that is alleviated
  • treated with anesthetic, analgesic or tranquilizing drugs, Similar procedure in a human would require topical or systemic anesthesia, Post-surgical pain treated with analgesia, Anesthesia used for restraint

Pain categories describe the level of pain anticipated for animals in the study and must be described for each procedure in a study.

At USF we have three categories, A, B, and C. USF pain categories equate to USDA categories as follows:

USF Cat A equates to USDA category C, and describes a lack of, or momentary pain or distress.

USF Cat B corresponds to USDA category D, and describes pain or distress that is alleviated, such as with anesthetic, analgesic, or euthanasia.
Pain Categories-cont.

USDA Category E = USF Category C
• = Pain/distress for which the use of appropriate anesthetic, analgesic or tranquilizing drugs would adversely affect the research
  • Analgesic studies
  • Death as an endpoint
  • REQUIRES SCIENTIFIC JUSTIFICATION

USF pain category C is equivalent to USDA category E and it describes pain or distress that is not alleviated with the appropriate treatments. As in cases where the use of appropriate anesthetic, analgesic or tranquilizing drugs would adversely affect the research.

Studies identifying this pain category must be extensively justified.
IACUC Review Types

eIACUC through the Applications for Research Compliance (ARC) platform

• There are two methods of review for protocols
  • Full Committee Review (FCR) – New research or teaching protocols
  • Designated Member Review (DMR) – Expeditied review of protocols
    • Research or teaching protocols previously approved by the IACUC (3rd year renewal)
    • Research or teaching protocols describing Category A procedures only
    • Wild Animals in or from Natural Settings
    • Murine Breeding Only
    • Animal Tissues
    • Antiserum Production

At USF, IACUC protocols can be reviewed in two ways, Full Committee review (FCR) and Designated Member Review (DMR).

In FCR, protocols are reviewed at a convened IACUC meeting, where a quorum of members votes on the protocol following presentation and discussion. In FCR, a protocol can be:
  - approved,
  - disapproved,
  - or require Modification to Secure Approval (RMSA).

DMR is an expedited review process, where a protocol is assigned to one IACUC member who reviews and provides a determination on behalf of the IACUC. In DMR the designated member can:
  - approve,
  - require modification,
  - or send the study to Full Committee review.
Outcomes of IACUC Review

• Approved as is
  • eIACUC system sends a notification to the PI that the protocol has been approved. Once the protocol is approved, that approval is valid for 3 years pending annual renewal.

• Requires Modifications to Secure Approval
  • The IACUC has a question or questions that need clarification before approval. If this is the case, the PI/study staff will receive notifications outlining the questions that need clarification, or steps that need to be taken before approval is granted. The PI must respond in writing and once the stipulations have been met and approved by the Designated Primary Reviewer, the PI will then receive a final approval notification.

• Disapproved/Tabled
  • If a protocol is disapproved, IACUC will require you to submit an entirely new protocol. IACUC will identify animal welfare concerns and provide requirements for a new submission.

IACUC reviews can have the following determinations:

Approved – where the eIACUC system sends a notification to the PI that the protocol has been approved. Once the protocol is approved, that approval is valid for 3 years pending submission of annual continuations.

Requires Modifications to Secure Approval – This means that the committee had questions that need clarification before approval. If this is the case, the PI will receive notification outlining the questions that need clarification, or steps that need to be taken before approval is granted. The PI must respond in writing and once the stipulations have been met and approved by the Designated Primary Reviewer, the PI will then receive a final approval notification.

Disapproved (Tabled) – If a protocol is disapproved, IACUC will require you to submit an entirely new protocol. The IACUC will identify animal welfare concerns and provide requirements for a new submission.
IACUC Modification Reviews

- **Amendments to an approved Animal Protocol**
  - Change in personnel, funding, strains, anesthesia/analgesia
  - Reviewed as Designated Member Review - assigned to one member for determination
  - Change in species requires new application and full review, except for some wildlife studies

- **Procedural Change to an Animal Protocol**
  - Minor procedural changes only, additional animals and change of PI
  - Change in funding to a federal source requires submission of grant face page, aims, animal section
  - Reviewed as Designated Member Review - available for all members (3 days) review and then assigned to one member for determination

In addition to reviewing new protocol submissions, the IACUC is tasked with reviewing modification requests submitted for approved studies. There are two types of modifications, Amendments and Procedural Changes.

Amendments are minor modifications which can be quickly approved. The changes permitted as an amendment are specifically limited to:

- A new or additional title
- A new or additional funding source other than federal or major agency sources
- A change in the certified research personnel other than PI and Surgeons
- Addition of another strain of the same species without a change in procedures or an increase in animal numbers

Procedural changes can include any amendment topic mentioned above and other changes including a change in PI or Surgeons, a change to major funding source, a change to species, or any changes to the protocol which remain within the scope of the original research hypothesis. Procedural changes are approved via the
Designated Review Process (DMR).

Written IACUC approval is required prior to implementing any changes, from either an amendment or a procedural change.
Next, we’ll review the process for submitting a Wildlife Research application.
ARC Access

- All IACUC studies are created in the eIACUC system, which is hosted on the Applications for Research Compliance (ARC) platform.
- In order to be able to use the eIACUC system you must first request an ARC account by emailing the ARC Helpdesk at rsch-arc@usf.edu and request an account.

All IACUC studies are created in the eIACUC system, which is hosted on the Applications for Research Compliance (ARC) platform.

In order to be able to use the eIACUC system you must first request an ARC account by emailing the ARC Helpdesk at rsch-arc@usf.edu and request an account.

Once you are issued an account you will log in and change your password and you select your use parameters.

It is very important that you select IACUC for your ARC usage in section 1.2 or you will not be able to be IACUC certified and any IACUC protocol you are included on will not be approved.

After you have an ARC account you can proceed with obtaining IACUC certification.
IACUC Certification

• To secure IACUC certification email IACUC administration at iacuc@usf.edu and request assistance with certification for Wildlife Research

• Basic IACUC certification will allow an individual to be listed on an IACUC study and requires following items:
  • Indication of Animal Experience (a CV and list of years of experience by species)
  • Health and Risk Assessment
  • Orientation Of Field & Wildlife Research Staff
  • AALAS Online Training Completion: Laws, Regulations, Policy and the Guide
  • Multi-Species Training Certificate of Completion(all non-PI researchers)

For assistance with IACUC certification, email IACUC Administration at iacuc@usf.edu, and you will receive an email with detailed instructions on how to complete the certification process.

When you email be sure to state that you will be working on wildlife studies, as this will expedite the process by informing the IACUC administration staff what information you will need.

To receive IACUC certification for working on a wildlife study you will need to provide the following in your researcher profile:

1. Upload a PDF of your CV or resume In Section 2.4
2. Section 3.1 – Enter your animal experience. It’s okay if you don’t have any relevant animal experience, indicate zero years of experience for the species and obtain training from your PI.
3. Section 3.2 – Upload your Orientation of Field and Wildlife Research Staff form. Complete the form, acquire required signatures, usually your PI, and upload the form as a PDF.
4. Section 3.4 – Complete the Health & Risk Assessment Form and upload it as a PDF.
5. Section 3.3 – Complete your online training, USF IACUC – Laws, Regulations, Policies, and the Guide – USF Orientation. This online training is required for all researchers. Please upload your certificate of completion.

6. Section 3.8 – A Wildlife Training statement. Upload a Multi-Species Training Certificate signed by your PI.

Additionally, you need to identify your PI and Co-Investigators in Section 2.6, so they may review your certification status.
Creation and Vet Review

- Create new IACUC application
  - eIACUC Study Team Manual
- Log in to the eIACUC system
  - Select create new study activity
  - Choose Wildlife Study
  - Follow the prompts to complete the smart form application
  - Send the application for veterinary pre-review

Once you have ARC access, you will be able to log in to the eIACUC system and create a new study.

The electronic IACUC application is a smart form which only requires you to complete relevant pages and will eliminate non-essential pages as you enter information.

The eIACUC Study Team Manual is an excellent resource with step-by-step instructions for creating and submitting IACUC applications, and can be accessed using the included link.
After you have completed the application, the PI will submit it for the required veterinary pre-review.

When you receive it back from vet pre-review, please address all veterinary comments. All changes must be made in the body of the protocol, not in the comments section. After the veterinary concerns are addressed, submit the study for IACUC review.

There may not be any vet review concerns, if so, proceed with IACUC submission.
RMSA and Approval

• Determination a week to ten days after submission
• RMSA and approval

Wildlife studies are reviewed via Designated Member Review (DMR) and the determination should be received within seven to ten days.

It may be approved out right, in which case - congratulations, you are done!

However, in many cases revisions will be required. When the determination is Requires Modification to Secure Approval, abbreviated RMSA, you will need to modify the study application as directed in the comments from the IACUC reviewer. All changes must be made in the body of the protocol, not in the comments section. You may reply to reviewer comments in the notes section, but this is not sufficient to address the concerns.

After all of the reviewer’s concerns are addressed, re-submit the study for IACUC review. This time the determination should be received in three to five days. Once the reviewer’s concerns are adequately addressed, the study will be approved.

Studies are rarely disapproved, but if you study is disapproved you will need to create a new study and re-submit
The End